

FARM CHEMICALS

OCTOBER 1961

50 CENTS

The management magazine of the industry



George R. Ferguson, chairman of NAC Board, discusses

What's ahead—progress or complacency?

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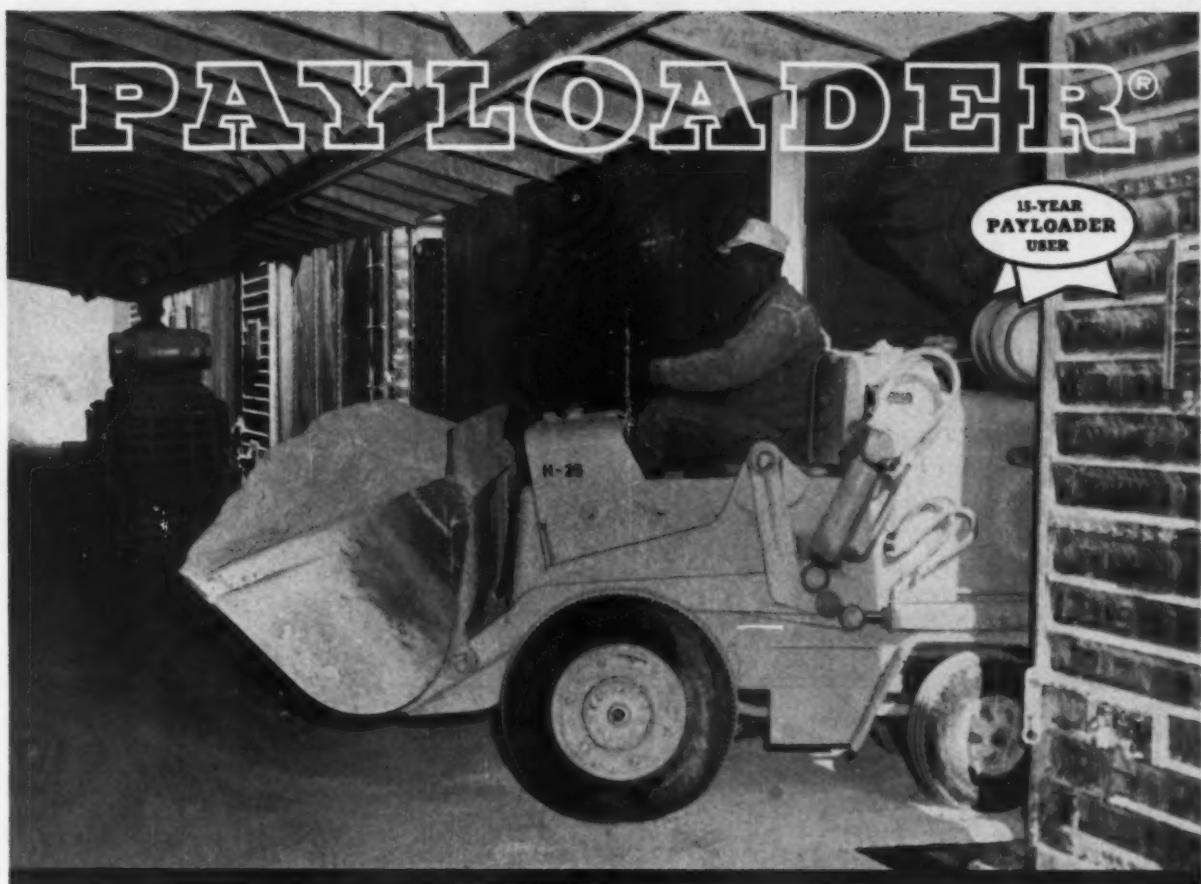
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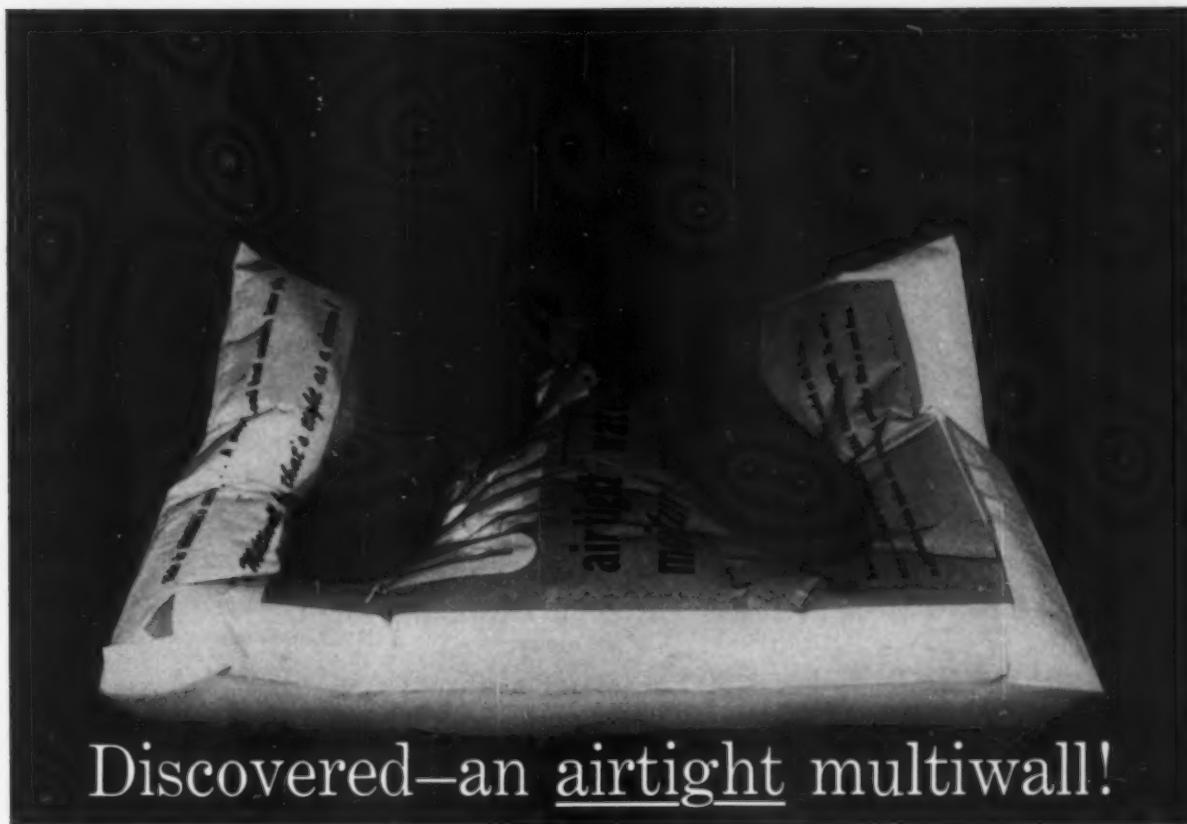
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THE COVER STORY

Not only our West Berlin forces are being "beefed-up" these days. The NAC arsenal of truth has also been strengthened for the continuing battle against "apostles of poisons" everywhere in our midst. Dr. George R. Ferguson, chairman of the board of directors of the NAC Association and president of Geigy Agricultural Chemicals, has provided more than his share of ammunition for this arsenal. But are NAC's efforts paying off? This is the question FARM CHEMICALS asked Ferguson this month in an exclusive interview for this NAC issue. But we didn't stop there. For an interesting discussion on NAC problems turn to page 13.



Discovered—an airtight multiwall!

Simple demonstration helps solve major packaging problem for Dow Chemical

The multiwall bag you see here contains nothing but air. The man standing on it weighs 200 lbs. Yet no air can escape. That's because the bag is Union-Camp's amazing new UNISEAL.

It ended a two-year search by Dow Chemical for a package that would provide a perfect vapor barrier.

Protection problem critical

The search began when Dow first developed an effective new crab grass killer. To successfully market this new product, an unusually tight package—even air-tight—was essential. The ideal package also had to be sturdy, printable, easy to handle and ship. And economical.

One day Dow engineers witnessed the UNISEAL demonstration you see above. If the bag could lock in air, then it must have the perfect vapor barrier. Further testing proved they were right.

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The remarkable new UNISEAL bag features four plies. An outer sheet of semi-bleached paper (for top print-

ability). Two middle plies of kraft. And an inner ply of kraft laminated to aluminum foil with polyethylene. A final extrusion coating of polyethylene resin over the foil serves as the heat-sealing medium for the inner seam and bottom.

The bag can easily be filled on *any standard filling equipment*. A special machine heat-seals the inner ply and applies adhesive to the tops of the outer plies. It then folds over the lip and pastes it to the outside of the bag. Finally, the machine centers a



UNISEAL'S unique inner ply is made of kraft paper laminated with polyethylene to aluminum foil. Bags can be easily filled on any standard filling equipment.



Secret of sealing. Special machine heat-seals inner ply, folds lip over and pastes to outside of bag. Finally, gum tape is applied (arrow) forming a positive airtight closure.

strip of gum tape over the edge of the lip to form a positive *air-tight* closure.

Apart from providing a perfect vapor barrier, Union-Camp's UNISEAL bag also turned out to be the least expensive container of any previously tried!

How much could a Union-Camp multiwall idea save you?

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NEWS



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LETTERS

PRODUCES TRAINING FILM

Phoenix, Ariz.

In the last issue of FARM CHEMICALS I was very interested to note your announcement of the FCMS to be held November 14-15 in New York City.

You may be interested to know that I recently completed a 30 minute sales training film based on my experiences in training salesmen in our industry. The message is directed at finding the keys that open the doors to self motivation, interest, and initiative. Emphasis, of course, is placed on personality, human relations, communications, and leadership. Three major areas are covered—attitude, self improvement, and selling mechanics.

We plan to use this film at our annual Arizona Agricultural Chemical Association meeting November 2nd. If any of the messages I carry can be of service to you, please contact me.

Gerald F. Finch
Branch Manager

CALIFORNIA CHEMICAL CO.
Ortho Division

We asked Mr. Finch to send us the material so that we could review it as possible editorial material. We're sure that the AACA members will profit handsomely from this film. —EDITOR.

MANAGEMENT SERIES

Richmond, Va.

I have read, with a great deal of interest, an article in the August issue of FARM CHEMICALS entitled "Management."

An introduction to the article referred to Demonstration School conducted at the North Carolina State College. The introduction indicated further that you would furnish additional information regarding these schools for industry.

I should appreciate receiving the information you have regarding this management program.

Thank you very much.

W. C. Childress

The Management Development Course was held on September 25-28. Write to Robert D. Dahle, Extension Marketing Specialist, North Carolina State College, Raleigh, N.C. —EDITOR.

Magee, Miss.
I read in FARM CHEMICALS, August, 1961, that your department has prepared a manual on "Management."

If this manual is available, I would like to receive two of them. Please mail and send an invoice for same. Thanks.

M. R. Calder, Manager
MAGEE COOPERATIVE (AAL)
Mr. Calder's request was referred to Mr. Dahle. —EDITOR.

Hayti, Mo.

We are duly impressed with the series of management articles which have appeared in FARM CHEMICALS.

I would appreciate being placed on a mailing list for notification of your forthcoming management short courses which, I'm sure, are held annually.

Being an Iowa State University graduate, I am pleased to see that there are other state universities that are equally aggressive in various fields. As a matter of fact, I feel this phase of education today is one of the most important and yet is given less attention than it rightly deserves.

Thank you for your co-operation and service.

Richard Reade, President
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EXTRA COPIES WANTED

Hannibal Ohio

Please send me a copy of "Fume Control in Superphosphate Manufacture," which appeared in the July, 1960 issue. Thank you.

R. P. Harvey
Effluent Control Superintendent
ORMET CORPORATION
Pryor, Okla.

Please send me a copy of your article entitled "Marketing Research and Its Importance to Farm Chemicals Manufacturers." I think it appeared in the May, 1960 issue. Thank you very much.

L. E. Craig
Director of Research and Technical Service
JOHN DEERE CHEMICAL CO.
Thank you for your interest in our magazine. Copies will be sent to you soon. —EDITOR.

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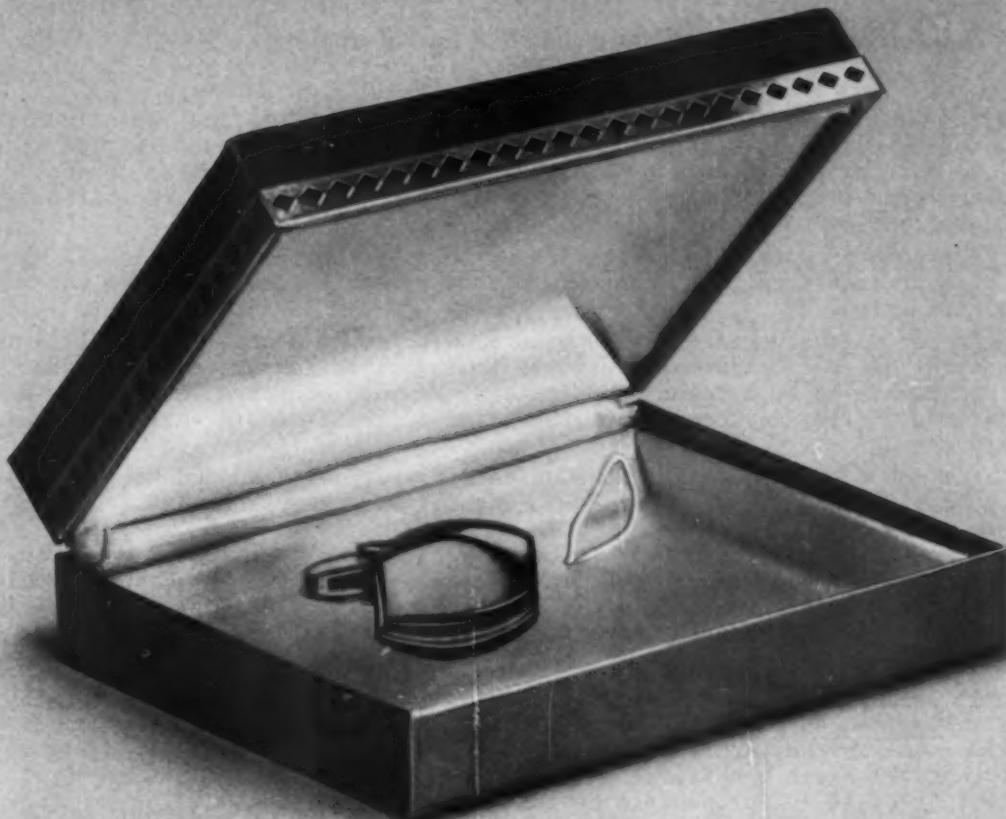
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WASHINGTON VIEWPOINT

By GEORGE PETER

F
C

- USDA enforcing stricter regulations on additives for meats and poultry.
- New enforcement policy will hit abuse, not use, of additives.

Chemical additives are in for tighter regulation by USDA. The recent public furor over Agricultural Research Service's approval last December of 10% added water in hams through the use of phosphate water-binder has shaken up and astonished some officials and they are determined not to have a repetition with other chemicals or additives.

What the agency appears to be gearing up to do is to put a stop to all across-the-table agreements on what chemicals may be added to food processed under federal inspection.

Uniform procedures would be set up instead for those seeking approval in the future for the use of chemical additives in federally inspected food products. There would have to be a formal application, reasons provided, and public advance notice in time for comment or hearings. A public record would be required in every case.

New laws won't be needed. USDA has authority already on the books, but frequently hasn't been issuing full formal regulations. "Gentleman's agreement" has often been the rule.

In the case of the watered hams, Secretary of Agriculture Freeman ordered public hearings across the country, found consumer reaction hot, then canceled the order allowing the added water. A new order gave those who want to use the phosphate additive 30 days in which to comment or the cancellation becomes permanent.

The ham case may be taken as a basic model of what to expect.

Chemicals added to processed poultry under USDA inspection are next on the list. Approval in the future will require proof that the additive is: 1) non-deleterious; 2) has a beneficial effect on the product; 3) doesn't promote deception or cause the product to be adulterated or unwholesome.

Tougher labeling rules for products containing chemical additives are coming up. In the case of the poultry, whether packaged or raw, a label would have to explain in "conspicuous wording" what chemical has been added and why.

Officials are not on a witch hunt . . . want nothing like the notorious sword-rattling cranberry scare on their hands. Questions of public safety are not involved. USDA would have to turn thumbs down on FDA-banned chemicals anyway. There will be no questions of residue to consider.

It's unofficial and won't be in the regulations, but you can count on USDA to screen for additives already in use but NOT approved by FDA. Those that are not will get the axe.

Uniform procedures are to apply first to applications for the use of new additives as presently planned. But USDA can order a review of chemicals long in use any time by giving due notice.

How will the new rules affect the use of farm and food chemicals? Our sources advise they consider abuse, not use, the problem. The new enforcement policy-makers are not anti-chemical or food faddists, we find. Some of them feel that incidents like the watered ham and cases of oversoaked poultry do the chemical industry more harm than good.

Aroused consumer interest is going to result in greater emphasis on whether the use of some chemicals results in deception, nonetheless. And this is going to have its effect on how officials regulate chemicals. The large number of bills for consumer protection introduced in Congress the past session are also having their effect on government regulators. There is still considerable pressure on President Kennedy to make good his campaign pledge to give the consumer a Consumer Counsel at executive level in the government. At USDA, Freeman is also bowing low in the direction of the consumer in return for consumer support of agriculture.



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WHAT'S DOING IN THE INDUSTRY

**F
C**

The 1961 Farm Chemicals Marketing Seminar will start off with a bang Tuesday, November 14, and continue on November 15. Meeting place: Yale Club, New York City. Some of the nation's leading marketing authorities and VIP's in the farm chemicals industry will participate.

Flowers can now stay fresh-looking as the day they were picked, due to a new product of Davison Chemical Division. Called "Flower-Dri," it is a special blend of silica gel consisting of small blue and white particles about the size of grains of sand. In the new drying and preserving method, flowers are buried for about one week in silica gel, which absorbs the moisture and when saturated turns entirely white. Then it can be reactivated by oven baking.

Alert farmers are making adjustments in their farm enterprises to take advantage of new techniques and knowledge, according to Truman Nodland, agricultural economist at University of Minnesota. In a recent study, Nodland found that farmers are increasing the size of their operations and concentrating on fewer kinds of crops. Some are shifting from small grains to inter-tilled crops, mostly corn and soybeans. In livestock the trend is toward specialization. While the number of farmers reporting each class of livestock decreased, there were substantial increases in the size of remaining enterprises.

The longest nitrogen pipeline in the world—22 miles—is scheduled to be built in the Delaware River Valley to serve a huge, new petrochemical complex. The line will run from Air Reduction Co.'s new \$6.5 million air separation plant in Claymont, Del., to new facilities of E. I. du Pont de Nemours & Co., Inc., Shell Chemical Co., and SunOlin Corp.

Insects are surpassing our best chemists in their ability to manipulate chemicals! D. E. Greenwood, entomologist at Virginia Truck Experiment Station, reports that the principle underlying insects' resistance to organic insecticides is their ability to do a lot of chemical adjusting. Their small, intricate biological systems apparently can modify insecticide molecules and render them harmless.

Secretary of Agriculture Orville Freeman has gone all out for co-ops. During the 33rd annual meeting of American Institute of Co-operation, he promised that "USDA will encourage the growth of co-operatives through which farmers can work together to produce and market their products to greater advantage and supply themselves with goods and services more effectively and economically."

FMC Corp. is playing a major role as defense supplier. In the basic chemical line, the largest portion of sales come from phosphates, barium, magnesium, chlorinated and agricultural products. Backing up the company's modern chemical plants are large reserves of phosphate ore in Utah and Idaho along with barite deposits in California. A new chemical unit is planned on the site of the U. S. Naval Ordnance Plant in South Charleston, W. Va. The old facility was picked up for \$4,320,000.

Agricultural Aircraft Association has issued an interesting summary of pesticide drift residue on alfalfa. The company made a series of six residue tests on the drift onto alfalfa from certain insecticide applications to adjacent cotton.

Former consultant to Shell Chemical Co., Dr. Mortimer D. Leonard, was honored upon his retirement by some 30 scientists representing various agricultural interests. As a commercial entomologist, Dr. Leonard's work was in the pioneering development of new uses for insecticides. He plans now to devote his time to publication of a book on aphids in New York.

There's "More Profit from Corn in Minnesota." This is the title of a new leaflet prepared by National Plant Food Institute in co-operation with University of Minnesota and Minnesota Bankers Association. "A good portion of the leaflet emphasizes the advantages farmers can reap from their soil resources with good management as opposed to average management," NPF report.

Ft. Meade, Florida . . . New Armour Phosphate Plant

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Q. Dr. Ferguson, do you feel that the industry is making progress in the creation of a more favorable image?

A. Yes, definitely. But it's slow, tedious progress. We've had excellent response from the medical profession, educational groups, food technologists, women's clubs, and other groups.

Q. Would you be more specific as to just what they asked for?

A. The industry facts book, "Open Door to Plenty," has been very effective. The NAC has printed and distributed about 165,000 of these books since

1958. They went to public and private libraries, women's clubs, science teachers, members of congress, etc.

In addition, the slide program was presented by industry people and others at all types of meetings. This presentation must be done well if we are to get our story across to the public.

Q. Would you explain who presented this slide program and how?

A. The NAC staff in Washington, D.C., of course, is quite small, but these people have made presentations to various groups. All members of in-

of thing that really interests people. Perhaps we ought to use a more sensational approach to cope with the recent stories in *The Saturday Evening Post*, *New York Times*, *Newsweek*, and other publications.

Q. How can the industry get the job done?

A. Well, the pesticide industry represents only about 2% of the total farm chemicals industry, but we get most of the adverse publicity. Any broad scale approach we might undertake would be very expensive—if we were to reach the tremendous audience that our critics reach. Even so, it's not the adverse publicity but the unwarranted, punitive legislation, which is not based on facts or needs, that is hurting us most.

Q. In an interview with a respected farm writer for the *Cleveland Plain Dealer*, we gained the impression that the idea may be prevalent that it's not so important what the industry is doing, but rather what it is not doing. What do you think?

A. Yes. Some people think we're skimping with money. Others say it's not so much money, but the approach. Personally, I side with the latter school of thought. If we could develop a more effective approach our story would be picked up and used.

Q. Dr. Ferguson, the "Smokey the Bear" program for preventing forest fires seems to be very effective.

Couldn't the industry do something similar in developing a "character" or symbol showing how chemicals make it possible for us to enjoy our forests and streams? In other words, couldn't we present the positive side—and get off the defensive?

A. Yes, that's what it will take—a new, fresh approach. The way things have always been done is the easy way! Maybe we can be accused of doing some of the things we criticize the farmer of doing. Perhaps this *Cleveland Plain Dealer* writer, and others like him could really help us here in developing a new approach.

Just what would happen to our wildlife and other resources if we didn't protect our trees? The insect menace is insidious and slow, but forest fires are spectacular, dramatic! The public should know, however, that seven times as much tree mortality is caused by insects and disease than by fires.

At present more than \$63 million are spent annually in the U.S. by both public and private agencies for forest fire control. In contrast, only about \$5 to \$6 million are spent annually for the control of forest insects.

I think we can turn the tables on those non-professional writers who don't take the time to really check the facts! I'm certain we have the "copy" that will make people stop and read the truth!



AN EXCLUSIVE INTERVIEW

NEW NAC APPROACH NEEDED?

How can the farm chemicals industry improve its image?

In this exclusive interview, Dr.

George R. Ferguson, president of Geigy Agricultural Chemicals and chairman of the Board of Directors of NAC, presents some new ideas on how to counterbalance adverse publicity.

dustry, especially sales personnel, are encouraged to speak to any group which may be interested. The extension service, experiment station personnel, and other college people have been most co-operative and have presented the story well.

With home gardening becoming a principal market for our industry, we look forward to reaching more city people with our story. Wherever it's presented, it's well received.

I think we can develop a rapport here between the suburbanite with chinch bugs in his lawn, and the farmer with chinch bugs in his corn. The home garden market is on the move!

Q. Some people question the advisability of the farm chemicals industry constantly being on the defensive. Do you think that the NAC has become too preoccupied with answering attacks by critics—and might actually be overlooking a more advantageous approach to the problem?

A. No, I don't think we're necessarily preoccupied with answering our critics. The market to which we sell is so basic to human needs. We may take some things for granted. It's certainly true that many people just don't know or care about farm chemicals.

Q. What do you feel we can do to appeal to people's senses more?

A. It's the impending disaster sort



Solving your marketing

Third Farm Chemicals Marketing Seminar November

STANLEY BAAR is president of the public relations counseling firm of Barber & Baar Associates, Inc., New York City. Experienced in journalism, he was an editor of the *New York Journal of Commerce*. In 1940 he became an executive in the public relations firm of Allied Liquor Industries, named later executive vice-president and managing director. He was executive vice-president of its successor, Licensed Beverage Industries. Baar has had wide experience in business and industry.



JACKSON V. VERNON, graduate of Mississippi State College and Columbia University, has held various positions with the Niagara organization since starting there in 1923. In 1952, he became president of Niagara Chemical Division and vice-president of Food Machinery & Chemical Corp. He is now vice-president in charge of marketing and distribution and is a member of the Chemical Divisions executive committee of FMC. He served as president of NACA for three terms and is now a director. He is also a director of FMC Machinery & Chemicals, Ltd.



Harvard honor graduate, Kopp has developed a management philosophy at Continental Can which centers on capital utilization. His work also entails operations analysis and management reports.

W. BREWSTER KOPP, manager of financial analysis, American Can Company, has held that post since it was created in 1958. His background is one of distinguished service in this field. He served as a Wall Street financial analyst, and later was with Standard Oil Company of Ohio and Continental Can. He is a

REGISTRATION & HOTEL REGISTRATION: The third annual FCMS will be held at the Yale Club. A block of rooms has been reserved for registrants at the nearby Biltmore Hotel. For further information or to register please contact Edward L. Meister, Jr., FARM CHEMICALS, Willoughby, Ohio.

This is a non-profit program for the industry. Thus, a nominal fee of \$50 will be necessary. This includes two luncheons, coffee breaks, a copy of the complete proceedings, plus additional copies at cost.

MEETING HIGHLIGHTS

TUESDAY

9:30 a.m. *The International Challenge*

John Fayerweather, managing editor, *The International Executive*; adjunct associate professor of international business at New York University.

John A. Field, vice-president of Union Carbide Chemicals Company and vice-president, marketing.

Question and Answer Session

12:30 p.m. *Luncheon*

2:00 p.m. *The Challenge of New Products*

Conrad Jones, partner, Booz, Allen and Hamilton, New York City.

H. F. Tomasek, vice-president and a member of the



ANTHONY E. CASCINO, teacher, author, economist, is vice-president in charge of marketing for International Minerals & Chemical Corp., a post he has held since 1957. He has enriched the field of retail distribution, inventory control, and market research. He was with OPA in Washington, D.C., and has been director of marketing, first for Bendix Home Appliances, Inc., and then for the Crosley and Bendix Divisions of AVCO, before joining International.

problems in the '60s

14-15, Yale Club, New York City

executive committee of the National Agricultural Chemicals Association; president and member of board of directors, Chemagro Corporation.

Question and Answer Session

WEDNESDAY

9:00 a.m. *Make A Profit Or Else*

W. Brewster Kopp, manager of financial analysis, American Can Company.

Anthony E. Cascino, vice-president in charge of marketing, International Minerals & Chemical Corporation.

Question and Answer Session

12:30 p.m. *Luncheon*

2:00 p.m. *Public Relations and Its Importance To the Farm Chemicals Industry*

Stanley Baar, president, Barber & Baar Associates, Inc., New York City.

Jackson V. Vernon, vice-president in charge of marketing and distribution and a member of the Chemical Divisions executive committee of FMC Corporation.

Question and Answer Session

Summary and Conclusions

HECTOR LAZO



JOHN FAYERWEATHER, author, teacher, researcher, and expert on international business, is managing editor of *The International Executive*; is adjunct associate professor of international business at New York University, president of the Association for Education in International Business, and is a leader in

international activities of the American Marketing Association. He organized the first executive program in management of international operations at Columbia. He is a member of the Foreign Commerce Committee of the U. S. Chamber of Commerce.

HECTOR LAZO will again be the moderator of the Farm Chemicals Marketing Seminar. Author of six books about marketing, his background also includes positions as manager of advertising and production with General Motors, president and vice-president of Co-operative Food Distributors of America, and assistant to the president and director of marketing and public relations with Sunshine Biscuits, Inc. Lazo is chairman of the Marketing Department, Graduate School of Business Administration at New York University.



JOHN A. FIELD, vice-president of Union Carbide Chemicals Company, and vice-president—Marketing, has held a variety of posts. On loan twice to Washington, his record is one of eminence. His work has covered research, sales development, and production management. Field's education includes a degree from Yale, and a fellowship at Oxford University. He is a member of several chemical associations, and is a Phi Beta Kappa.



CONRAD JONES is a partner of Booz, Allen and Hamilton, management consultants, New York City. He directs their widely known research and consulting work in new product practices. He had 10 years of diversified consulting experience, and has held other business positions in engineering and advertising. He has served as an advisor to top management of about 100 companies in many industries. Jones has honor degrees from Purdue and Harvard Business School.



H. F. TOMASEK, active in the field of aerosol development and adaptation of new synthetic organic chemicals in the farm chemicals field, is vice chairman and a member of the executive committee of NACA. He joined Pittsburgh Agricultural Chemical Company, Division of Pittsburgh Coke & Chemical Company in 1948, becoming midwest regional sales manager in 1950. Named manager in 1953 of the Agricultural Chemical Division, he became vice-president when it merged with the Chemagro Corporation in 1955. Made president in 1959, he is also a member of the Board of Directors.

ORGANIZING

How "Jake" settled on a plan

Farm Chemicals continues its new series on management by developing "Jake" Smith, farm chemicals manufacturer, who had two alternatives in developing an organizational plan. Here's how he solved his problem with a "combined" system.



Third in Series

A wealth of material has gone into a manual which is the basis of this new series on management. The manual grew from materials presented at test demonstration schools conducted by the North Carolina State College Marketing Staff. Managers of various marketing firms through their attendance at the schools, as well as in individual consultation, also provided excellent suggestions and guidance in the preparation of the manual. The N. C. State marketing group has done an outstanding job in providing education and training in the skills and practice of management. FARM CHEMICALS is proud and happy to be able to publish this series. If you should desire information on how these schools are set up for industry, please contact Mr. Robert D. Dahle, Extension Marketing Specialist, North Carolina State College, Raleigh.—EDITOR.

JAKE SMITH frowned as he looked at the chart before him. There it was—every position in the company carefully labeled and placed in the proper spot on the organization diagram. Right on the corner of his desk was the organizational manual he himself had written. Yet things weren't going smoothly. There was too much "jockeying" for power.

Poor Jake. Staring at that chart isn't going to help him much. Somewhere along the way, in transferring his plans into an organization chart, he'd forgotten one of the basic rules of good management.

It isn't enough to draw a beautiful chart and to write up an organizational manual. The members of the management team have to understand and to accept the *why* of the organizational principles, not merely the *what* of the organizational plan.

The men under Jake's command weren't "ornery" by nature. Their failure to co-operate was mainly Jake's

fault. He hadn't taken the time to make sure they knew their responsibilities, their authorities, and their relationships to each other.

Jake's troubles could have been prevented if he had followed these basic rules of organization:

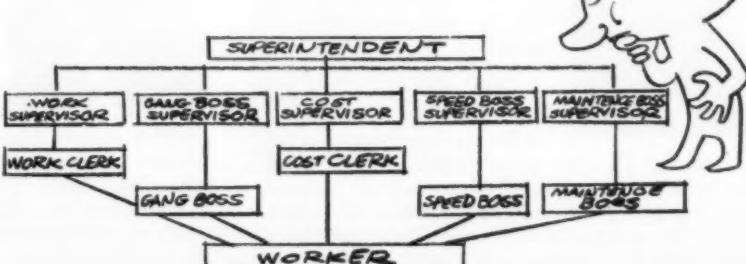
- Develop your organization plan from the point of view of the activities required to achieve your objectives.

- Group activities according to their natural likeness and according to the abilities and interest characteristics of your personnel.

- Make certain that each person's responsibilities, authorities, and relationships are fully expressed in written form, clearly understood, and completely accepted not only by the individual himself, but by all persons affected by the position. *This is what Jake forgot.*

- Delegate authority and freedom to act in proportion to the person's responsibilities. As many as possible of

(Continued on page 18)



**WHAT'S NEW
FROM IMC?**

DECISION MAKERS'

445-page blueprint for successful

FERTILIZER OPERATIONS

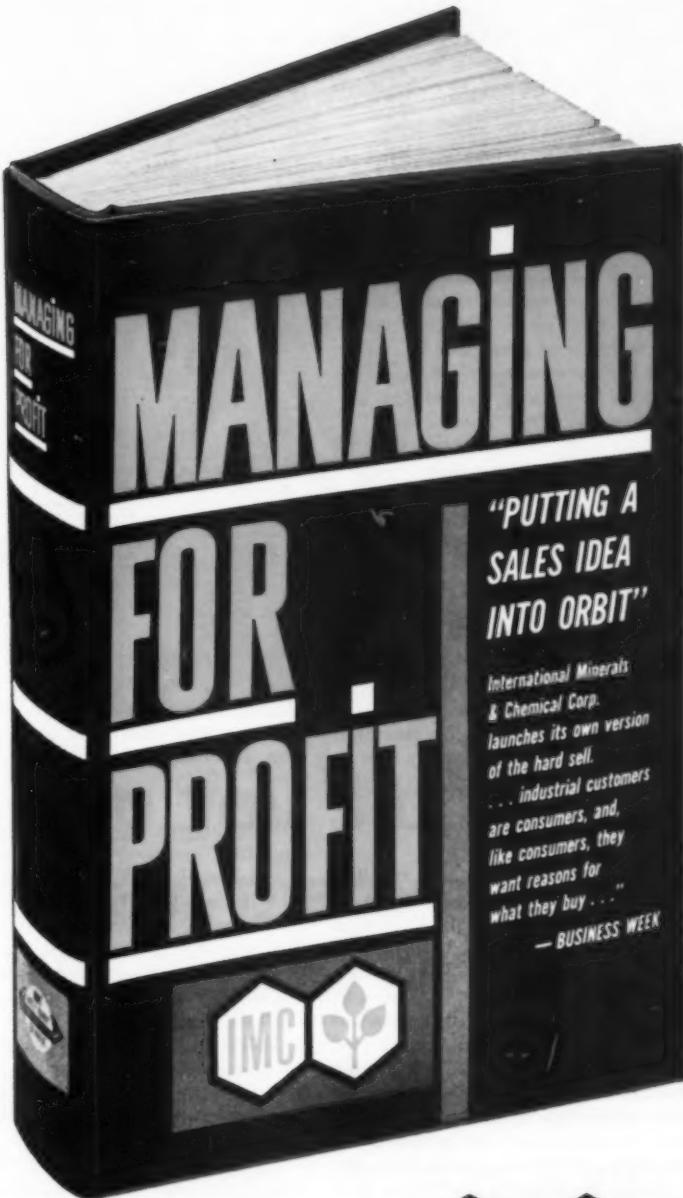


IMC's new bound volume, *Managing for Profit*, promises to become the basic standard reference for the industry. This authoritative manual penetrates every aspect of decision making in the fertilizer business. This book will be distributed to customers during the month of October by IMC representatives.

Industry executives who have seen advance copies enthusiastically report *Managing for Profit* will be an unequalled source of assistance for them, for their managers and key people.

You'll find this volume crammed with sound, practical treatment of every major fertilizer manufacturing, sales and promotion activity. It supplies new insights, new approaches, new methods for scheduling and executing these plans . . . to save you time, cut costs, strengthen your sales and profit position.

Managing for Profit represents IMC's latest effort in its dynamic total service concept. You can expect many more such forward-looking and profitable helps through IMC's trend-setting Full Orbit Service Program.



INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center • Skokie, Illinois



"Jake" decided to combine the best of two organizational structures; Here's how his line and staff organization operated under two managers

(Continued from page 16)

the decisions affecting specific operations and requiring approval before action should be made only an organizational level above the person putting the decision into effect.

- Don't have "too many bosses." No person should report to more than one superior. And the number of persons reporting to one superior should be few enough that he can give each person adequate attention when he needs it and still have time to complete his other responsibilities.

- Make good use of the informal organization—the natural groupings of people based on friendships and like interest. Watch that cliques, "gangs," and other informal groupings don't handicap your official organization.

- Keep your organizational plan flexible and sensitive to changing conditions and growing personnel.

- Co-ordinate independent organization units by setting up definite procedures and policies.

- Don't make the executive directly in charge of inspection, quality control, and audit of operations responsible for final control of these functions.

- Prepare a written organization manual containing functional and personnel charts for each organization unit, job descriptions, statements of standing committee functions, and statements of organization principle. Make one responsible for keeping the manual up-to-date; and making certain that everyone affected understands the organization plan and that they are trained in how to function effectively according to this plan.

A NEW DILEMMA

Not all of Jake's troubles resulted from lack of communication. When he structured his organization, he forgot that structures are like a variety of a plant—each has its good and bad characteristics.

First, he chose the pure line organization. Under this structure, the head of each unit is responsible only to his superior and has authority over all the activities within his unit. He can call on no one to help him with problems of purchasing, personnel, accounting, etc. Each must be directly under the unit head. A typical line organization has as many accounting sections, personnel sections, etc., as it has departments or units.

Jake found there were three major advantages to this structure: each unit

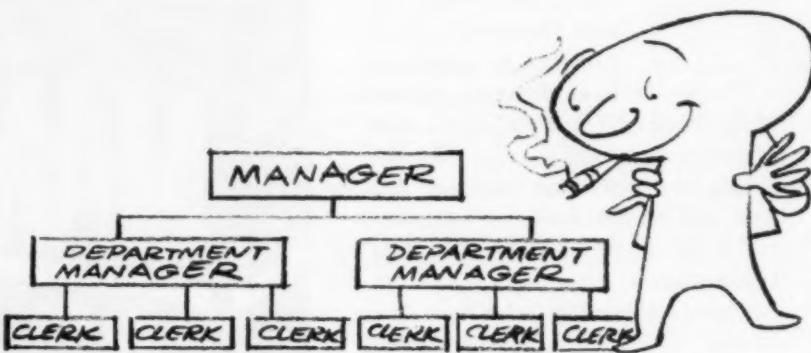
head was completely responsible for everything in his unit; decisions could be made quickly because conferences of specialists were not needed; and each person had a direct line of command with only one person above and one person below him.

But a line organization is useful only when the company is fairly small; when problems are simple or unchanging; when good all-around executives can be found; and when undivided authority is absolutely essential.

ity in the line and the availability of specialized staff aid. There were no problems of "buck passing" or uncertainties concerning the responsibility for their performance of specific functions.

"NO HELP WANTED"

Jake encountered only one difficulty under his new system. Sometimes, the line executives were unwilling to accept the help offered by the staff specialists; and sometimes, the staff specialists tried



Poor Jake. His company couldn't function under this system. With a frown on his brow, he discarded his neatly drawn chart and started a new one, carefully headed "staff organization."

In the pure staff organization, Jake found, the executive has authority for only one function and is responsible to a number of specialists.

With his pencil Jake tried to draw the lines of authority of each person. His neat chart became a jumble of lines. They were impossibly complex. How could he ever co-ordinate his people under this system?

He sat and thought and thought. Then he had an idea. Why not combine the best of both structures into a single structure—called, naturally, the line and staff organization.

Under this system he would have two managers. One would manage a unit whose function was the achievement of a major objective of the organization; the other a unit which would give assistance or advice to the first group.

Jake found the combined system had the advantage of both undivided author-

to force their know-how upon others.

Yet, with all his pleasure with his new line and staff structure, Jake didn't forget the importance of the informal organization. He realized that informal groups, if properly used, can serve as a training ground for employees who are promotable to executive positions. These men have established leadership based upon the needs of their associates.

Jake Smith was a happy guy once more. He'd solved the problem of organization. Now, all he had to do was grab the reins and start directing. Look for his story next month. ★

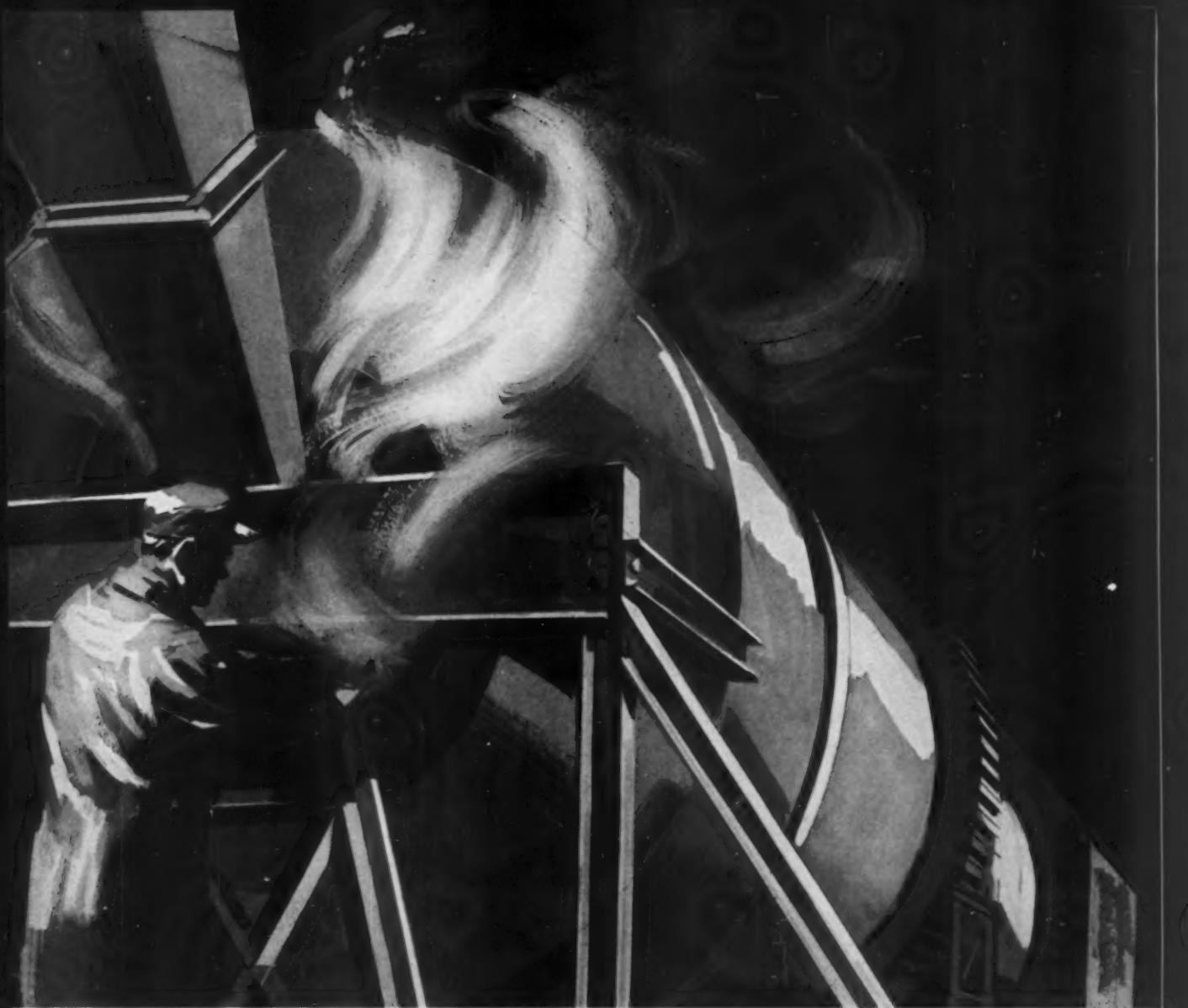
OTHER ARTICLES IN THIS SERIES

AUGUST

Management—What is it?

SEPTEMBER

Planning—Key to profits



Texaco can help you stop loss of fertilizer raw materials

Many people in management believe that nitrogen loss in ammoniation, over-analysis, bag breakage, loading and unloading, amounts to only 4 or 5%.

Actually, only the best-run plants have such low losses. More typically, they may approach 15%.

These are findings by Texaco technical experts who help tighten procedures in fertilizer plants as part of the over-all Texaco "Stop Loss" program. For instance, nitrogen losses — including losses of ammonia, N₂ and oxides of nitrogen — are found to be a prime problem in making mixed fertilizer. Our people can advise on proper methods of mixing to avoid losses during ammoniation . . . on plant processes such as crushing, screening, drying, cooling. You can also tap our experts' knowledge of transportation and unloading equipment, storage and handling.

Would you like to have a Texaco man visit you for a look at your possible losses? The service is free. Write to Texaco Inc., Petrochemical Sales Division, 135 East 42nd Street, New York 17, N. Y., or 332 South Michigan Avenue, Chicago, Illinois. FC-40

Tune In: Huntley-Brinkley Report, Monday Through Friday—NBC-TV

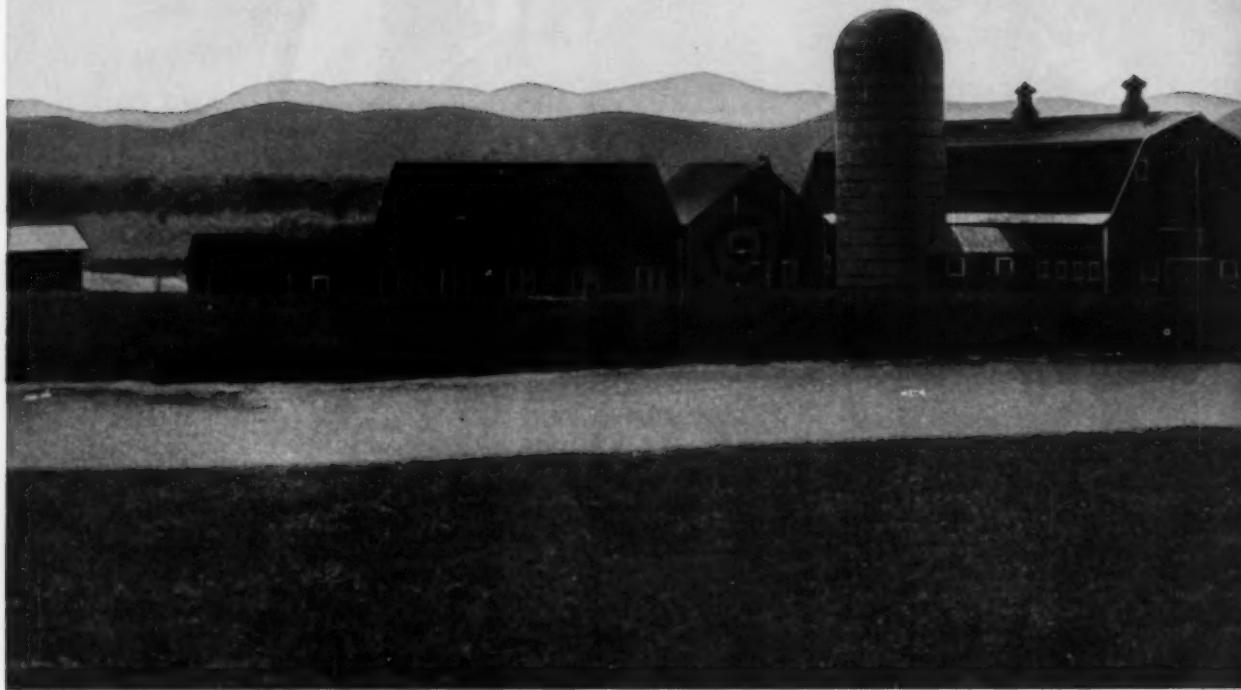


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AQUA AMMONIA, ANHYDROUS AMMONIA, NITROGEN SOLUTIONS, DIISOBUTYLENE, CUMENE, BENZENE, TOLUENE, ODORLESS MINERAL SPIRITS, NAPHTHENIC ACID, PROPYLENE TETRAMER AND RUST INHIBITORS.

Geigy

creators of chemicals for modern agriculture



ATRAZINE

HERBICIDE

For weed control in corn. One application controls annual broadleaf weeds and grasses all season. Safe to handle, non-irritating. At higher dosage rates, used for non-selective weed control around farms and industrial sites.

SIMAZINE

HERBICIDE

For weed control in corn and in nurseries. One application at planting time in corn or to certain established nursery stock, provides season-long control of broadleaf weeds and grasses. Safe to handle, non-irritating. At higher dosage rates, used as a non-selective herbicide for industry.

GEIGY AGRICULTURAL CHEMICALS • Division of Geigy Chemical Corporation • Saw Mill River Road, Ardsley, N.Y.

DAZINON

INSECTICIDE

Highly effective, versatile organic phosphate insecticide. For dependable multiple insect control on most fruit and vegetable crops; residual fly control in dairy barns, farm buildings, food processing plants and other fly infested areas. Extensively used by the pest control industry for control of roaches and other insects.



METHOXYCHLOR

INSECTICIDE

Multi-purpose insecticide with residual action against many insects attacking forage crops and stored grain, and for control of many insect species on fruit and vegetable crops. Direct application to livestock controls horn flies, cattle lice and ticks.

SEQUESTRENE®

METAL CHELATES

For correction of minor element deficiencies in ornamentals, fruit trees, vegetables and turf. Compatible with most commonly used insecticides, fungicides and fertilizers.

For correction of iron deficiency

Sequestrene 330 Fe Iron Chelate

— for use in alkaline or acid soils

Sequestrene 138 Fe Iron Chelate

— for use in calcareous or other highly alkaline soils

Sequestrene No Fe Iron Chelate

— for use in acid soils

For correction of manganese deficiency

Sequestrene Na₂ Mn Manganese Chelate

For correction of zinc deficiency

Sequestrene Na₂ Zn Zinc Chelate

CHLOROBENZILATE

MITICIDE

Safe, effective, economical miticide for use on deciduous and citrus fruit, ornamentals and nursery stock. Long residual action. Non-irritating to skin, relatively non-toxic to humans and animals. Does not affect insect parasites and predators or bees under normal field conditions. Compatible with phosphate insecticides and copper sprays.



ORIGINATORS OF DDT INSECTICIDES

NAC TO DISCUSS:

*28th NAC Annual Meeting
at the Homestead, Oct. 29-Nov. 1*

PROGRESS OR COMPLACENCY

MEMBERS of National Agricultural Chemicals Association are looking forward to the 28th annual fall meeting to be held at the Homestead Hotel, Hot Springs, Va., October 29 to November 1, 1961.

Highlight of the convention will be an address by the Hon. Abraham Ribicoff, Secretary of Health, Education, and Welfare, which will be given at the formal banquet to be held Tuesday evening, October 30.

Other addressees will be given by distinguished authorities in their respective fields. Wives are invited to attend the meeting sessions, luncheons, and other functions; a coffee hour is scheduled for them each morning at 10:00.

Monday's program includes an address by Dr. George R. Ferguson, president of Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation; the report of the NAC finance committee; and a talk by Dr. J. O. Rowell, extension entomologist at Virginia Polytechnic Institute. Of interest to the ladies will be an address by Miss Willie May Rogers, who is director of the famous Good Housekeeping Institute in New York City.

The Monday morning session will conclude with a talk by Dr. D. A. Spencer, research biologist with the U. S. Fish and Wildlife Service, at the Wildlife Research Center in Denver, Colo.

An early Tuesday morning feature for golfers will be a golf tournament at 8:00.

On Wednesday morning at 10:00 there will be an open forum, which will give the members an opportunity to discuss problems of the industry and ask questions of the NAC staff.

PROGRAM OF NACA

SUNDAY, October 29

Registration

MONDAY, October 30

Morning Sessions

- 9:00 Welcome—P. J. Reno (Chairman, Program Committee), Hercules Powder Company
- 9:15 Address—Dr. George R. Ferguson, president, Geigy Agricultural Chemicals
- 9:45 NAC finance committee report, E. H. Phillips, Chairman
- 10:15 Coffee intermission
- 10:30 Address—Dr. J. O. Rowell, Virginia Polytechnic Institute
- 11:00 Address—Miss W. M. Rogers, Good Housekeeping Institute
- 11:30 Address—Dr. D. A. Spencer, U. S. Fish and Wildlife Service

Afternoon Sessions

- 12:45 Luncheon
 - Speaker—Dr. G. Herbert True, Notre Dame University
- 2:30 NAC committee meetings as scheduled
- Evening Program
- 6:00 Reception for members and guests
- 7:00 Board of Directors dinner meeting

TUESDAY, October 31

Morning Program

- 8:00 Golf tournament
- NAC committee meetings as scheduled
- 12:30 Luncheon—Miss Cathy Bauby
- Evening Program
- 7:00 Banquet—The Hon. Abraham Ribicoff, Secretary of Health, Education, and Welfare

WEDNESDAY, November 1

Morning Sessions

- 9:30 NAC staff report
- 10:00 NAC open forum—Discussion and questions
- 10:30 Introduction of new NAC officers and directors
- 11:00 NAC committee meetings as scheduled
- 12:00 Adjournment



Dr. D. A. Spencer



Miss Willie Mae Rogers



Dr. J. O. Rowell



Miss Cathy Bauby



The Hon. Abraham Ribicoff



Dr. G. Herbert True

PROGRAM COMMITTEE

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WILMINGTON, DELAWARE

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POLYETHYLENE COATINGS

10# MEDIUM DENSITY

15# LOW DENSITY

8# HIGH DENSITY

Problem





MP 200

Solution



FARM CHEMICALS

Read how International Paper's revolutionary "MP Levels of Protection" gives you a simple yardstick to get the exact moisture vapor protection you need at the lowest possible cost.

TO MEET the demand for a simple method of specifying moisture-barrier multiwall bags, International Paper has developed its revolutionary "MP Levels of Protection."

This method cuts through the confusion resulting from the many different types of moisture-barrier paper available today. It gives you the first simple yardstick for comparing one moisture-barrier paper against another. Here's how it works.

All of our moisture-barrier papers, regardless of type of coating or weight, now have one common designation—"MP." Each "MP Level" was scientifically arrived at by determining the average range of moisture protection provided by low-density PE coated papers. Using this paper as a standard, we assigned all moisture-barrier papers to the appropriate MP Levels according to their average MVT ratings.

For example, the following chart shows the equivalent levels of protection offered by medium- and high-density polyethylene-coated papers.

As you see, a paper with 10 lbs. of

low-density polyethylene coating is rated at MP level of 150. You can get this same level of moisture protection *more economically* by using a moisture-barrier paper with 6 lbs. of high-density polyethylene coating.

This means that now you don't have to be an expert on papers, coatings and weights to get the best moisture-protection for your money. Instead you specify only the *level of protection* your product requires. Or simply tell your International Paper Bagpak® representative what mois-

ture-barrier paper is in your present bag. He can supply you with the *most economical* bag that gives you the exact level of protection required.

International Paper developed this new method to enable you to get the *exact moisture protection you need, at the lowest possible cost.* It is an example of the complete packaging service offered by International Paper.

Whatever your multiwall packaging needs, it will pay you to talk to your International Paper Bagpak packaging engineer.

EQUIVALENT LEVELS OF PROTECTION

Moisture Protection Level	MP Level Based on	GF/MVT*	Moisture-Barrier Paper Giving Equal Protection
MP-100	7.5# L.D.	2.4	5.8# M.D.
MP-150	10.0# L.D.	1.6	6.0# H.D.
MP-200	15.0# L.D.	1.1	8.0# H.D.
MP-300	20.0# L.D.	0.8	11.0# H.D.
MP-400	30.0# L.D.	0.6	15.0# H.D.

NOTE: L.D. means Low-Density Poly Coating

M.D. means Medium-Density Poly Coating

H.D. means High-Density Poly Coating

*GF/MVT—General Foods Moisture-Vapor Transmission rate is measured as grams of water per 100 sq. inches per 24 hours.



INTERNATIONAL PAPER

BAGPAK DIVISION • NEW YORK 17, N.Y.

INTERVIEW

With ROBERT J. DRAKE

Farm Writer
Cleveland Plain Dealer
Cleveland, Ohio

How can the farm chemicals industry IMPROVE ITS IMAGE?

HOW CAN the pesticide industry improve its image? What is required in obtaining a "better press?" What will make "good copy" for writers in our daily newspapers and other publications? Are we talking to ourselves too much? These are questions which FARM CHEMICALS will attempt to answer in a series of articles starting in this issue. Leading off this series is an interview with a staff writer for the *Cleveland Plain Dealer*.

Like all newspaper writers, "Bob" Drake must produce the kind of copy that will "sell papers." How can the pesticide industry be certain that writers like Drake will give it a "fair shake?" In effect, how can the industry and Drake (and other writers like him) *co-operate* in producing editorial material that people enjoy reading?

FARM CHEMICALS hopes to be able to supply some of the answers through this interview article, by getting to the heart of some of the problems.

Q. Recently the *Cleveland Plain Dealer* carried a series of articles entitled "Our Insulted Waters." As the writer of this series, you no doubt were dependent on a number of sources of information. What sources did you use.

A. Report of the Senate Select Committee on National Water Resources, 87th Congress. Prints 7, 9, and 24 submitted to the committee by U.S. Public Health Service. Proceedings of the Conference on Physiological Aspects of Water Quality, September 8-9, 1960. Report of House Committee on Science & Astronautics, 87th Congress. Proceedings of National Conference on Water Pollution, December 12-14, 1960. These were the main sources. Many other publications were consulted.

Q. An agricultural extension news release from West Virginia State University quoted David Quinn, extension plant pathologist and entomologist, as saying that *only 1%* of the total number of fish reported killed from June-December, 1960, was attributed to agricultural chemicals and the majority of these were other than game fish. Industrial wastes accounted for 5,460,000 of the 6,300,000 fish reported killed. Quinn had access to the same report from the U.S. Public Health Service's Division of Water Supply and Pollution Control as you did. Yet you chose to ignore

the comparison of the actual numbers of fish killed and reported: "Of 286 reports received from 36 states showing a total of 6,300,000 fish killed from June through December, industrial wastes were held responsible in 98 instances. Agricultural poisons were reported in 81 instances. Domestic sewage was named in 27 kills." *Why did you report it this way—excluding the relatively small number of fish killed by agricultural chemicals in comparison to industrial wastes?*

A. The introductory sentence to the fish-kill section of the article you quote from read: "Agricultural chemicals are still only the second most effective fish killer." (This is on the basis of the number of reports received by USPHS, not on fish killed. It is the frequency of the fish-kill report, not the actual death count, that makes the impact on the public.) The 81 cases of agricultural chemical poisoning reported accounted for 73,000 dead fish, or about 1.16% of the total killed by all reported causes. However, one single industrial "accident" killed more than 5 million fish. The article subordinated the industrial poisoning aspect because this had been dealt with in numerous previous stories, and the subject of this particular article was agricultural chemicals.

Sportsmen and conservationists have effective means of calling public attention to damage to aquatic life. It behooves agriculture and the chemical industry that serves it, as well as all potential sources of water pollution, to assume responsibility for safeguarding water.

Q. What part does sensationalism play in choice of subjects for articles by your newspaper?

A. Sensationalism normally plays a reverse role in the *Plain Dealer*. If it's sensational, it gets buried inside, and if it's lurid, it doesn't get printed. The farm beat offers even less opportunity for the sensational type of story.

However, this policy does not exclude sprightly reporting. I personally do not have to "sell papers." But I am required to appeal to the readership interest of a public overwhelmingly urban, vastly unacquainted with, and I fear disinterested in, the technicalities and problems of agriculture.

(Continued on page 28)

New Products from Niagara

Thiodan®

A new broad-range insecticide which gives effective, long-lasting, safe control of a variety of insects. Registered for use on:

almonds
apples
apricots
artichokes
beans

broccoli
cabbage
cauliflower
cherries
cotton

cucumbers
eggplant
grapes
melons
nectarines

ornamentals
peaches
pears
peppers
plums

potatoes
prunes
pumpkins
seed alfalfa
seed clover
seed peas

soybeans
squash
strawberries
tobacco
tomatoes
walnuts

Tedion®

A new selective miticide which affords unusually long control—up to two months with one application—even of mites resistant to other materials. Harmless to beneficial insects and safe for use on nearly all highly sensitive flowering plants. Approved for use on:

apples
apricots
avocados
cantaloupes
cherries

citrus citron
cotton
crab apples
figs
grapefruit

grapes
honeydew melons
lemons
limes
mangoes

muskmelons
nectarines
oranges
ornamentals
peaches

pears
plums
prunes
quinces
roses

seed alfalfa
strawberries
tangelos
tangerines
tomatoes
walnuts

Ethion

A phosphate pesticide with both miticidal and insecticidal properties. As a miticide, ethion combines initial kill with long residual action. As an insecticide, it is effective against varying pests including scale on deciduous and citrus fruits, lygus bug on forage, codling moth on apples, leafminers on vegetables, onion maggots and chinch bug on turf.

Registered for use on:

almonds
apples
beans
cherries

cotton
figs
grapes
grapefruit

melons
nectarines
onions
oranges

ornamentals
peaches
pears
peppers

plums
prunes
seed alfalfa
seed clover

strawberries
tomatoes
turf
walnuts

...added to Niagara's line of grower-proven agricultural chemicals...

niacide An exceptionally effective yet bland apple fungicide. Controls scab and other fungus diseases, does not encourage spread of mildew. Produces finest texture and color on fruit, with no spots, netting, blotch or russet even on susceptible varieties. Safe for use on all varieties under all climatic conditions.

kolo materials

Effective, mild fruit and vegetable fungicides for control of both mildew and scab as well as other orchard fungus diseases. Kolodust, Kolofof and Kolospray are formulations of Kolo sulfur (fused bentonite sulfur). The Kolo 100 materials are combinations of Kolo sulfur and dichlone. Kolo Carbamate and Carbamate Kolodust contain Kolo sulfur and ferbam in balanced formulations.

bedrench

A soil sterilant containing allyl alcohol and ethylene dibromide in a special formulation for easy, effective treatment of vegetable, nursery, flower and tobacco seed beds. Mixed with water and drenched on surface of prepared seed beds, Bedrench controls nematodes, weeds and grasses, insects and soil diseases to provide top quality plants at planting time.

For Complete Technical Information, write to



NIAGARA CHEMICAL DIVISION
FMC Corporation, Middleport, New York

"I cannot accept the premise that the great majority of the public is concerned about the use of agricultural chemicals."

(Continued from page 26)

Our deliberate approach to farm news is to report and interpret for the city reader. He needs the instruction where farming is concerned, and the farmer as a declining minority needs his good will. This city reader is a busy man and I am not going to reach him with stodgy reporting on improved sheep dip formulas or safer castration knives.

Recently I quoted one of our experiment station entomologists to the effect that a ban on agricultural chemicals would wipe out our farm surpluses almost overnight and lose us our role as one of the world's best-fed people. If this is sensationalism, I hope you will forgive it. The vital part played by chemicals in food production and insect control has been reported sympathetically in the *Plain Dealer*.

The paper has also reported the death of one of our greenhouse operators and a public school gardener, both victims of chemical spray poisoning, according to the coroner's finding. These stories were not overplayed. A recent press wire story from Florida, reporting four deaths in recent months from use of parathion, was not carried in the *Plain Dealer* at all, to the best of my knowledge.

Q. You say that you feel you have given agriculture and the pesticide industry a fair break in your articles. How do you explain this *lead* in one of your articles: "Every normal American has become a walking bug bomb." Isn't this sensationalism?

A. No. It was a semi-facetious, attention-seeking lead sentence, fully explained in immediately succeeding paragraphs. You no doubt have heard the old story about the mule trainer who first clubbed the animal over the head to get his attention. Writers for the popular press don't have the captive audiences enjoyed by editors of technical publications. We've got to corral our own.

Q. True, later in the article you explain that "the highly efficient human excretory system . . . tends to expel poisons in low-level doses before they accumulate to toxic levels, without which the human race would not have survived to know about DDT." But too many people are headline readers and don't read all the details of a story. Their impressions of pesticides are created by catchy phrases which "aren't necessarily so" — in fact, may be entirely *false*, such as this one was about the "human bug bomb." Don't you think more confusion is created than anything else with this type of lead to an otherwise objective article?

A. I assume no responsibility for the false impressions of readers who fail to get beyond the first paragraph.

Instead of belaboring the validity of the mechanics of reporting on a serious matter, agriculture and the chemical industry ought to be concerned over the fact that pollutants of unknown long-range effect are entering the human system through food and water. Deliberate addition of some of these substances would justify criminal prosecution. Accidental pollution amounts to criminal negligence without intent. Let's not put too much trust in the efficiency of the human kidney.

Public health authorities have a legal and moral right to inquire into possible cancer-causing agents. It took decades to expose our ignorance of the 1920's when radium was painted on watch dials. Are we making new mistakes? Nobody knows.

Q. All right, let's pursue this problem of producing a better image for the pesticide industry from another angle, then. What makes "good copy?" How can we create an attitude toward the *positive side* of the pesticide situation—rather than toward the falsehoods being spread daily by crackpots who are nothing less than "apostles of poison."

A. I can't accept the premise that the great majority of the public is concerned about the use of agricultural chemicals. Should we arouse their sleeping fears by a futile attempt to persuade food faddists, organic gardeners, and pseudo-medical quacks? I will continue to report on the constructive side of chemistry in agriculture (reserving the right to report on its abuses). But I don't think a deliberate campaign is justified.

As a reporter probably read by more amateur gardeners than professional growers, I have some qualms about writing too much about pesticides and herbicides. In many cases they are not for amateur use. The producer who needs them can get better information about them through the extension service, experiment station, and professional organizations. As for the consumer, he is eating the best food at the cheapest cost in terms of labor of any people in history, thanks in large part to chemistry.

Q. Let's take a specific example of the kind of story which should have appeal in these dark days of the Cold War—the Sevin Insecticide Airlift to Egypt. Why is the public so apathetic to such successes as this—and to the great Story of American Agriculture in general? We're the most well nourished people in the world. We're decades ahead of Russia in this area of competition. Nowhere in the world can the housewife go to market so confident of finding fresh produce unblemished by worms or bugs or blights. Yet the public seems to prefer to see America's

(Continued on page 30)

ROBERT J. DRAKE is a friend of agriculture. He has seen a great number of his articles on agricultural subjects published in the *Plain Dealer*. For his outstanding job of reporting and interpreting agriculture for city people he has won many awards, such as several Newspaper Guild awards for public service and other categories; third place in 1959 in American Agricultural Writers contest; last year, four awards—including Thomas L. Stokes Award for reporting on water.

"Bob" is a member of Newspaper Farm Editors Association; Sigma Delta Chi, professional journalism society; president of Cleveland Farmers' Club, and is past president of Cleveland Newspaper Guild.





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DRAKE INTERVIEW

(Continued from page 28)

agriculture and the farm chemicals industry slandered and abused by authors with no formal training in the fields they attempt to cover. How can you help to get across the story that the farmers of the nation could not possibly produce 135 million tons of food required by 180 million people each year without chemicals? Does the public understand that the current pesticidal programs can be credited with increasing our food supply by an amount sufficient to feed

60 million people? If not, is this "good copy?"

A. Don't all of us take our blessings for granted until we lose them? Certainly our efficient American agriculture and our generosity in trying to get rid of the surpluses is a blessing. Perhaps another is that the slander and abuse of the uninformed has made so little headway. The success of our agriculture is the topic I write about most frequently, because it's good copy.

Q. Do you feel that your newspaper has a responsibility to show how these chemicals are not inherently bad . . . that the United States (and Canada) have the most rigid controls in the world . . . and yet there are those who regard the pesticide industry as "poisoners of the public"—rather than *defenders* of our vital food supplies?

A. Any farm news medium should report on the achievements through chemistry, at the same time being aware of the dangers of misuse, negligence, and ignorance. As for our rigid controls, I am not qualified to substitute my judgment for any standards developed by process of law.

Q. *Evaluation of safety* is a constantly changing thing as new products and new data become available. With the increasing complexity of these new products, *scientific judgment*—not legislation—is what's really required in order to arrive at the *practical working level*—where risk to human health is reduced to the bare minimum and where progress is not stifled. Because of this country's restrictive legislation and regulations at local, state, and federal levels, however, many U.S. companies have abandoned research on new pesticides. In fact, during the past decade a disproportionately large share of new pesticides have originated from European research laboratories. Do you think this is good for our economy—and do you think that less restrictive legislation and controls would serve the same purpose, while encouraging expansion of safer, more effective pesticides by our own companies?

A. The cost of an approved label should be the same whether the chemical is developed in this or a foreign country. Restrictions may be a discouraging factor, but perhaps other considerations enter into it—including Europe's head start in chemistry. Many drugs for human use—penicillin and insulin, to mention only two—originated abroad. Again, I'm not inclined to overrule Congress, USPHS, or USDA on standards. Basing the Miller Amendment standards on carcinogenics stifles opposition. It's like being against soil conservation and 4-H.

Q. As a writer who understands agriculture, would you be interested in studying these problems which confront the pesticide industry and agriculture in general—and then attempt to create a better atmosphere in your newspaper toward the "pesticide problem"?

A. I'm agreeable to trying to do a better job on any phase of reporting. But I won't concede that this paper hasn't taken a few constructive licks at the subject or that a "better atmosphere in your newspaper" needs to be created. ☆

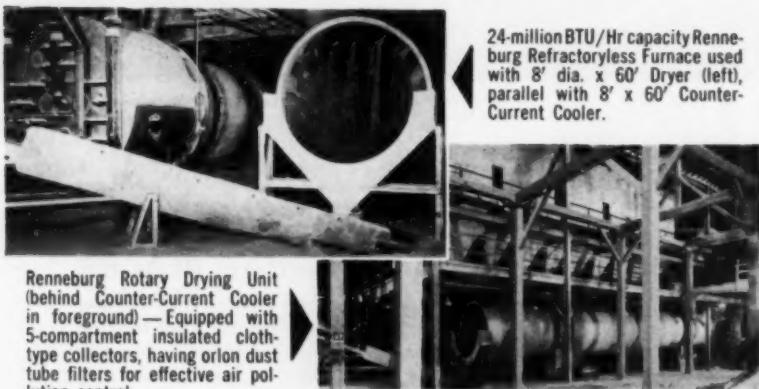
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Renneburg Rotary Drying Unit (behind Counter-Current Cooler in foreground)—Equipped with 5-compartment insulated cloth-type collectors, having orlon dust tube filters for effective air pollution control.

Literature and information on request.

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The importance of follow-through in NH₃ and Nitrogen Solutions purchases

by Ray Funk

About the Author.

Follow-through is Ray Funk's specialty. He has been doing such work for 14 of the 23 years he has been engaged in sales work. For the last six years, Ray, as Product Distribution Coordinator, has devoted his time exclusively to customer service work on nitrogen products.

* * *

Follow-through on a sale is for the seller *not* the buyer. The ideal in this follow-through is to obviate the need for the buyer to do anything further after placing the order except to be ready to receive the shipment when it arrives. As a seller, we often

go beyond the delivery responsibility by helping a customer in such matters as designing facilities for storage and handling. We may also assist him with educational programs on the safe handling of the Ammonia and Nitrogen Solutions.

But there is much more than this to sales follow-through on NH₃ and Nitrogen Solutions Sales. When we receive an order for Anhydrous Ammonia or Nitrogen Solutions, we must be ready to tell the customer at any time exactly where his shipment stands and when he should be receiving it. We must know what tank cars are available, when they will be loaded and when they

will leave our siding. We must also know when the railroad who receives the car will be making it into a train. And of course, we must know the routing that will most expeditiously

deliver the shipment to the customer.

This same attention to follow-through is true of truck shipments. We schedule accurately the arrival, loading and departure of truck transports from the plant; the surest route and the time of delivery. During peak Spring and Summer this is critical. To us it is important that the needs of our customers are attended to without interruption regardless of the method of delivery or seasonal peaks.

* * *

Would you like this kind of follow-through on your purchases of NH₃ and Nitrogen Solutions? Call American Oil Company.



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910 SOUTH MICHIGAN AVENUE
CHICAGO 80, ILLINOIS

the 1961 Pesticide Season

Farm Chemicals sent questionnaires to about 500 pesticide formulators and basic producers. Here are the results from 104 companies that replied.

WERE THINGS "A BIT ROUGH" in the pesticide business this past season? The answer is "yes . . . and no," according to a FARM CHEMICALS survey completed just before press time.

A questionnaire was sent to almost 500 pesticide formulators throughout the country. Replies were still coming in at the time this was being written, but the cut-off was made at 104 "workable" questionnaires returned. This was better than a 20% return. Here are the answers:

Did your pesticide sales improve during the past (1961) season?

Yes	60
No	43

In the past there have been numerous complaints about unfair price cutting. Was it a factor this season?

Yes	95
No	11

How about so-called "freight allowances"—was it a factor?

Yes	42
No	33

Did your business suffer, in your estimation, as a result of such activities?

Yes	76
No	30

Are you diversifying product lines and activities in an effort to smooth out the profit-loss statement?

Yes	78
No	12

Are your herbicide sales growing?

Yes	68
No	20

Greatest (herbicide) increase in:

Granular	26
Liquid	50

Did you sell fertilizer-pesticide mixtures?

Yes	35
No	55

If so, is your (fertilizer-pesticide) market—

Growing?	18
About same?	15
Decreasing?	1

Is your home market growing?

Yes	41
No	35

What percentage of your business?

0-10%	25
10-25%	4
20-30%	3
30-40%	1
50-60%	3
60-70%	2
100%	1

Do you foresee more or fewer formulators and distributors?

More	35
Fewer	43
About same	8

(Continued on page 34)



Now Chief Kay-Two-Oh can take time out to enjoy the Harvest Moon as he listens to the Indian Love Call with his Sweet Sioux — because he knows that it takes more than a moon, or even a medicine man, to bring in a good harvest.

Proper fertilizers are recognized in today's scientific farming methods as essential to producing bumper crops. The Chief is proud that the only business of

Pee-Cee-A is supplying potash for these fertilizers. It's gratifying to have helped in the production of a bountiful harvest.

It's also gratifying to the Chief to feel that Pee-Cee-A offers the best service possible. If his scouts can be of service to you, let him know!

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PCA Standard 60% Muriate of Potash

PCA Coarse 60% Muriate of Potash

PCA Granular 60% Muriate of Potash

Potassium Chloride (99.9% KCL min.)

Sulphate of Potash

Who should control price cutting in the industry?

Specifically, what new products did farmers use extensively in special markets?

Guthion	20
Sevin	20
Atrazine	10
Dibrom	5
Thiodan	6

A large number of other new products were mentioned from 1 to 3 times. They are too numerous to list. It is interesting to note that where Atrazine received 10 mentions, Simazine received only 2 mentions.

What special merchandising programs—such as newspaper ads, radio and TV spots, "sales gimmicks," etc.—do you use?

Newspaper ads	47
Radio	32
TV	18
Mailers, leaflets	19
Pest schedules	3
General advertising	3
Movies	1
Grower meetings	1
Magazine ads	5
House organ	3

A variety of other ideas, such as pens and scratch pads, free goods with certain types of orders, field service, trade publications, point of purchase, dealer meetings, billboards, booths, etc., received 1 or 2 mentions.

Will the distributor become more basic and actually become a *formulator* in order to maintain his position in the pesticide market?

Robert S. Wise, of Robert S. Wise, Inc., Wichita, Kans., thinks so.

He also thinks that "basic manufacturers should be the ones to control price cutting on their products." In many cases, he says, "they try and have as many jobbers as possible regardless of need or the service that they render to the trade."

How did his company improve its situation in 1961?

"Diversification into other lines such as equipment and other related products have enabled us to show a profit in a below-average pesticide year," he answered.

They went all out with special merchandising programs, too. Dealer educational meetings, newspaper advertising, TV, "Weekly Weed & Insect Reports," continuous slide projectors, exhibit booths, and other "gimmicks" were used.

"The agricultural chemicals industry is immature and 'runs scared,' one executive told FARM CHEMICALS. There are too many direct sales at jobber's discounts, too many farmer-jobbers; he added.

Present policy of large companies

will drive jobbers into formulating to compete with them. Large companies will sell direct or set up many farmer-jobbers," he reported.

C. Eagleson, Farmcraft Chemicals of Tigard, Ore., wrote us that his business was off from last year. He added:

"The price cutting problem stems from attempts to 'buy business' with a cut price, or to lure large-volume accounts with a discount.

"Only weapon available to prime producer of a chemical is to refuse delivery to offending customer. Few if any producers are willing to axe a pet account; therefore, there are no positive solutions to the problem.

"Another ill is the phony category: A large grower obtains a custom applicator's license and is forthwith classed as a 'dealer' and sold all products at dealer prices. Ditto for orchardist who erects a shed to pack his own (and maybe a neighbor's) fruit. He is declared a 'distributor' and henceforth purchases some commodities at the same level as we, as formulators, do.

"National producers of patented products could stop such abuses at once if they had the guts to risk losing a sale or two. Traditional dealers are losing out, formulating distributors will hang on awhile."

N. T. Taylor, general manager, Wedgeworth's, Belle Glade, Fla., in reporting that their sales did not improve this season, said:

"We could buy mixed dust labeled and already bagged cheaper than we could buy the materials."

He reported that their herbicide sales were growing. Greatest increase was in liquid form. He revealed numerous complaints about price cutting.

George C. Finklea, FCX Wholesale Service, Sumter, S. C., said their sales improved, with price cutting being a major deterrent to further improvement.

"Some way (we must) distinguish between a legitimate dealer and a big farmer-user," he said. "Big farmers are buying at the dealer price."

He said they are diversifying by manufacturing and formulating products that are not standard—and pushing these products. He reported that the home market was 15 to 20% of his business.

W. R. Wood, president of Wood Chemical Company, Lubbock, Texas, reported fewer sales than last year. Freight allowances hurt—as well as price cutting in the industry, he said.

"The number one solution is to do away with consignment," he said. "Consignment requires much larger inventories and when they do not move, the industry panics and cuts prices to move

material. It does not work, but they keep trying."

He added that "certain basic manufacturers" should be more selective in the formulators and distributors to whom they sell.

S. C. Smith, president of Smith of Uvalde, Uvalde, Texas, reported improvement in sales over last year. How did he do it?

"Raise price to modest profit level and sell what you can on service and quality. Seems better than losing money."

He felt that there would be fewer formulators in the future—"this one being a casualty if profits don't improve."

John R. WittPenn, Rockland Chemical Company, West Caldwell, N. J., said their pesticide sales improved.

He felt that the reason some companies fail is that they do not consider freight costs closely enough. He reported price cutting in his area was a major deterrent to increased sales, as well as freight allowances.

He added that basic manufacturers should watch their distributors more closely. Too many of them are operating in a small area and are not financially sound, he added.

F. M. Feffer, president of Arizona Fertilizer and Chemical Company, Phoenix, Ariz., reported fewer sales, price cutting being the culprit.

"In our opinion," he said, "the prime producers of pesticidal materials are presently at fault. In their eagerness for business they are supplying many so-called processors who have little, if any, equipment for proper blending of technical materials.

"This eagerness on their part, even though we appreciate the fact that business is increasingly competitive, has as much as anything else helped to demoralize the present unholy pricing structure.

"Then, too, some of the blenders, particularly the so-called nationals, have increased the dealer's discounts to the point that the ordinary dealer can offer discounts to the farmer and still have the same profit margin that he would have had if the dealer discounts been on a realistic basis."

Feffer said they are diversifying and spending more money through an enlarged technical staff—not only insecticide-wise, but also fungicides and other agricultural chemical specialties.

They have a monthly house organ of 3500 circulation. They advertise in newspapers, make use of giveaways, and hold farmer meetings.

What were their major pest problems?

Answer: "You name it, we have it."

Feffer predicted "possibly more" formulators and distributors. ☆

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You'll save by using more of the low-cost nitrogen materials . . . less acid . . . and you have more room to use lower cost phosphates.

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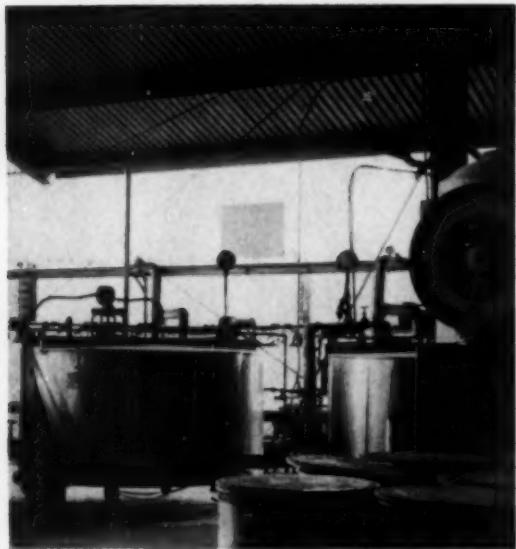
See Sohio first for high quality anhydrous ammonia — aqua ammonia — coated 45% or uncoated 46% urea — and 18 nitrogen solutions, including those containing urea.

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MATERIALS HANDLING CUSTOM APPLICATION



A side of the building which opens to the air is a safety feature at Arizona Pest Control Company, Glendale, Ariz.

WIDE
OPEN
SPACES

Ari-Pest's Safety Secret

By EDWARD RENNO

THANKS to more effective chemicals and faster dusting by air and ground machines, the cotton, vegetable, grain, and alfalfa crops in Arizona and California are in greater production than ever. Playing no small part in this project is the Arizona Pest Control Company of Glendale, Ariz.

Under the Ari-Pest label, the company produces a complete line of agricultural insect chemicals. The most important formulations are 50% DDT, hydrocarbons and dust bases (dieldrin, endrin, BHC); malathion and parathion, Phosdrin, and 50% dylox soluble powders.

SAFETY IMPORTANT

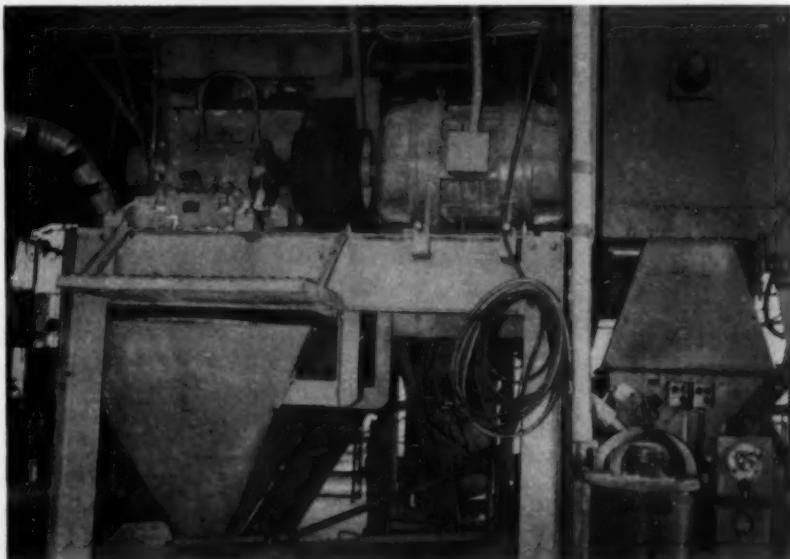
The workers who turn out the Ari-Pest line of insecticides enjoy safer working conditions because of the factory design and the special safety features established by Harvey Bales, general manager of the company.

Bales was in on the building of the plant and installation of equipment, from pouring the first concrete to mounting the last machine. The factory building is by Pascoe and the adjoining warehouse is a Butler metal building.

The factory building is open on three sides in order to prevent any dust accumulation. In addition, since organic phosphates as well as other chemi-

cals can easily be fatal, three large fans are located on the closed side in order to maintain air circulation.

The plant safety is so well designed



This Mikro #4 pulverizer is largest in state, produces 1-ton batches of dust concentrates.

WHAT ARE DRI-SOL[®] BENEFITS IN MIXED-FERTILIZER PRODUCTION?

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More and more fertilizer manufacturers are turning to DRI-SOL ammoniating solutions as a sure, time-tested way to lower production costs and improve mixed-fertilizer quality.

For in addition to the eight cost-saving and quality-building advantages shown above, DRI-SOL can also help manufacturers offset the high water content of low-strength acid. It also helps to produce grades which are

difficult or impossible to make with conventional solutions.

What grade of DRI-SOL meets your needs best? From a wide choice of formulations you can select the solution that offers you the greatest number of advantages. Each grade contains less than 0.5% water. Grades range from 24% ammonia and 76% ammonium nitrate, to 50% ammonia and 50% ammonium

nitrate, and are generally available in all the Southern and Midwestern States.

Why not get complete information? Technical data to fertilizer manufacturers available upon request. Write: Agricultural Chemicals Department, Commercial Solvents Corporation, 260 Madison Avenue, New York 16, New York. Offices also located in: Atlanta, Shreveport, St. Louis.

COMMERCIAL SOLVENTS CORPORATION





Harvey Bales designed this plastic helmet with hose attachment that can be connected to any of 30 outlets spaced throughout plant.

that a chemical engineer from American Cyanamid, after a tour of the plant, recommended some of the safety features be used for Cyanamid's own plants.

It is to Arizona Pest Control's credit that a man has never been off work due to sickness from chemicals. As well as designing a safe plant, Bales has adapted safety clothing to the production needs. "Chemicals have to be respected," Bales says. "And if you do this, the rest is easy."

All plant workers are issued and required to wear a helmet and a cap under it, goggles, coveralls, aprons, boots, and a respirator. These items are decontaminated at the end of each shift.

For the more dangerous phosphates, a special air helmet is used. The clear plastic helmet, designed by Bales, fits down over the shoulders and ties across the chest. Fresh air is fed in through a hose attached to the top of the helmet, forcing air and foreign

matter away from the bottom of the helmet and providing the operator with clean cool air.

The source of air is a compressor, located outside the factory building, which filters and refrigerates the air before pumping it to the workers. There are 30 air valves, strategically located, where workers can attach their helmet hoses.

PRODUCE ALL TYPES

With emphasis on custom mixing, the plant is equipped to produce liquid, dust, and granule insecticides. Ari-Pest's Mikro #4 pulverizer, the largest in the state, produces 1-ton batches of dust concentrates. Cerulose 2001, by Corn Products, is one of the materials used in reducing chemicals to a safer level.

The granule impingotron can turn out the desired granule size at a rate of one ton per hour. Granular products are run through a finds remover to eliminate smaller sizes and powders and help maintain high quality. Pike's Peak Clay from General Reduction Company of Chicago, is the principal carrier for the granule insecticides.

The liquid products are processed in a series of stainless steel vats. In liquifying DDT, a process which requires heating, a heater with coils of copper tubing is used. Oil is run through the tubing to be heated and then on to raise the DDT flakes to the liquifying stage.

DYLOX IMPORTANT CHEMICAL

The big advantage of most of the Ari-Pest products is that they can be applied for general insect control where high toxic material would be restricted because of the residue factor. Thus, even during that critical period a few days before harvest, a crop can be protected from destructive insects.

Ari-Pest is playing a more impor-



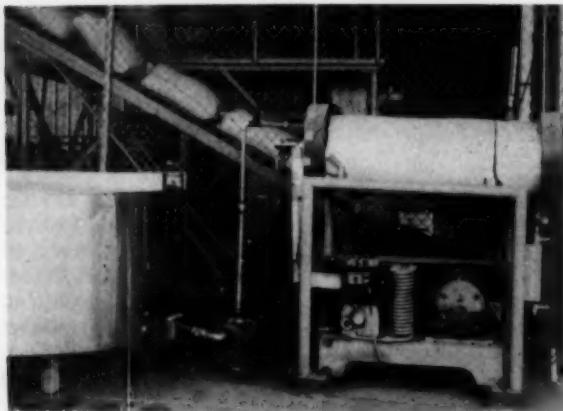
Many of safety features at Arizona Pest Control can be attributed to Harvey Bales (left), general manager, shown talking with Bruce Bell (center) and Harry Bonsall, Jr., a part owner.

tant role in this respect since dylox, the major ingredient for this type of insecticide, can be formulated in only two places in the U.S.—at Ari-Pest and in Fresno, Calif.

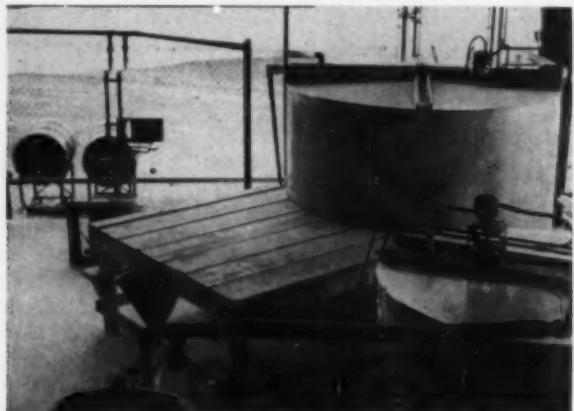
Arizona Pest Control also supplies Chemagro, a national insecticide maker, with most of its dylox. The original material, an organic phosphate (dipterex phosphonate) is manufactured in Germany, shipped to Arizona by air where it is formulated into 50% dylox which is then supplied to Chemagro or further processed by Ari-Pest.

According to Harry Bonsall, Jr., one of the firm's owners, Ari-Pest has 11 field representatives in Arizona. All of the field men are either graduate or trained entomologists in order to supply advice and information to crop growers as well as high quality products.

These expert services and effective products are vital factors in the important million dollar agricultural industry in Arizona and the southwest. ★



Compressor, located outside of factory, filters and refrigerates the air supplied to workers when the more dangerous phosphates are being processed. All workers are required to wear a plastic helmet, goggles, coveralls, aprons, boots, and a respirator.



The agitators are located on top of the vats for complete mixing. A heater is used to keep oil at high temperature when DDT flakes are being liquified. Ari-Pest also formulates hydrocarbons and dust bases; malathion and parathion; Phosdrin; 50% dylox soluble powders.

SYMBOLS OF PLANT LIFE



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In the middle ages, working with little help from prior research, alchemists frequently developed materials by accident.

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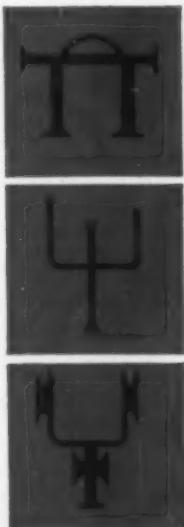
STANDARD HIGH-K MURIATE IS TAILOR MADE FOR CONVENTIONAL FERTILIZER MANUFACTURE AND VARIOUS RATIOS OF GRANULATED GRADES. IT FEATURES UNIFORM PARTICLE SIZE RANGE AND CHEMICAL ANALYSIS.

COARSE HIGH-K MURIATE IS USED IN THE MANUFACTURE OF CONVENTIONAL FERTILIZER AND IS ESPECIALLY USEFUL IN GRANULATION PLANTS. REASON: A CRYSTAL STRUCTURE WHICH DOES NOT BREAK DOWN WHEN ACIDS AND OTHER LIQUIDS ARE USED IN FORMULATION.

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Medieval alchemists' symbols for potash and cibbled ashes



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ACS Discusses Fertilizer Problems

CHICAGO was the scene of the 139th annual meeting of the American Chemical Society. During the six day meeting papers were presented on every phase of the chemical industry. Here are abstracts of just a few of the papers presented on the manufacture of fertilizers and the importance of micronutrients.

CALCIUM, MAGNESIUM, AND SULFUR CONTENTS OF MIXED FERTILIZERS MARKETED IN 1949-50 AND IN 1955-56. *W. H. Hoffman, R. J. Ferretti, and K. G. Clark, USDA, Beltsville, Md.*

The trend to higher analysis fertilizers often is regarded as signifying an accompanying decrease in the calcium, magnesium, and sulfur contents of the nation's fertilizers. Samples of mixed fertilizers marketed during the 1949-50 and 1955-56 fertilizer seasons showed that although the average calcium, magnesium, and sulfur contents decreased 5.3, 12.8, and 4.8%, respectively, in this six-year interval they remained at substantially the same levels as in earlier years.

The ratios of the secondary nutrients to nitrogen, phosphorus, and potassium have decreased appreciably, however, owing to the trend to high-analysis mixtures. The tonnage of secondary elements applied in mixtures during the 1955-56 season exceeded that applied in the 1949-50 season, since the increase in the tonnage of marketed fertilizers more than offset the decrease in the average contents of the secondary elements.

PRODUCTION OF HIGH ANALYSIS FERTILIZERS UTILIZING A PREREACTOR. *T. J. Bosman and J. H. Surber, Federal Chemical Co.*

Methods for production of granular high-analysis fertilizers, using a prereactor in conjunction with a TVA-type continuous ammoniator, were studied on a plant scale.

Heat of reaction between the ammonia in ammonia-ammonium nitrate

solutions and either sulfuric and/or wet process phosphoric acid was utilized in the reactor to produce a nitrogenous slurry of low water content, which was subsequently used to promote agglomeration of other materials. Utilization of these methods produced an acceptable consumer product with some economies of raw material. Typical grades studied were 16-8-8, 15-15-15, 15-10-10, and 12-12-12. Physical properties of the products and their bag storage qualities were judged to be good.

COMPARISON OF THE COSTS OF LIQUID, BULK-BLENDED, AND GRANULATED MIXED FERTILIZERS. *Julius Silverberg, N. L. Spencer, and J. R. Douglas, Jr., Division of Chemical Development, TVA, Wilson Dam, Ala.*

Comparisons were made of the economics of producing and distributing liquid, bulk-blended, and granulated mixed fertilizers. The results indicate that costs, f.o.b. manufacturing plant, for the granulated and bulk-blended mixed fertilizers are about the same and are somewhat lower than for the liquid-mixed fertilizers. However, when distribution is considered, the granular mixed fertilizer is more expensive because of the wider area that must be covered, which increases the cost of handling and delivery.

TREATMENT OF WESTERN PHOSPHATE ROCK TO IMPROVE ACIDULATION CHARACTERISTICS. *Wm. H. Honstead, Department of Chemical Engineering, Kansas State University, Manhattan, and D. R. Boylan, Engineering Experiment Station, Iowa State University, Ames.*

Western phosphate rocks are known to require more sulfuric acid for satisfactory conversion of the phosphate to available forms in the production of superphosphate than Florida and Tennessee rocks. The acid required was reduced about 4% by finely grinding the western rocks, followed by air separation to remove some nonphosphatic material. Even higher savings of acid were obtained, 8% or more, by froth flotation with a cationic collector. Simple

washing of the rock was not effective and calcination to remove organic matter actually decreased the conversions obtained.

SUPER FLO PROCESS FOR SUPERPHOSPHATE PRODUCTION. *Walter J. Sackett, Sr., A. J. Sackett & Sons Co., Baltimore, Md.*

First, ground phosphate rock is automatically weighed and continuously delivered into a blending cone where it is continuously penetrated by controlled swirling streams of sulfuric acid and water. This primary acidulation phase of initial rock acid compact is followed by an intense puddling action. From the puddler, the mass is discharged into the solidifier which permits the mass to harden into a cake-like substance at its discharge. A rotary spiral cutter removes the superphosphate from the solidifier in meal form, at which point it is elevated to the shuttle belt system for transferring the newly-made superphosphate to storage. The product manufactured by this patented process has a noticeably hard grain structure, but its high porosity gives it excellent ammonia absorption properties.

USE OF CONCENTRATED SULFURIC ACID IN PRODUCTION OF GRANULAR NORMAL SUPERPHOSPHATE. *L. D. Hand, Jr., J. M. Potts, and A. V. Slack, Division of Chemical Development, TVA, Wilson Dam, Ala.*

The use of concentrated sulfuric acid in making granular superphosphate was studied in small-scale tests. The process involved mixing phosphate rock with concentrated acid (96% or fuming), denning for about 30 minutes, granulating by spraying water on the acidulate in a rotary drum, and curing.

The den product was a dry, semigranular material that granulated easily with little formation of fines or oversize. With the fuming acid, the usual particle size of rock (about 70% under 200-mesh) was satisfactory; with 96% acid, however, finely ground rock (about 90% under 200-mesh) was necessary to prevent stickiness of the acidulate.

In comparison with the usual process



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PRODUCTION METHODS

for granulation of superphosphate, this method eliminates the need for removing superphosphate from a curing pile and disintegrating it, improves granulation to the extent that screening and recycling probably are unnecessary, and eliminates the usual drying step. Evolution of fluorine, a valuable byproduct, is also increased.

NEW DEVELOPMENTS IN PILOT-PLANT PRODUCTION OF HIGHLY CONCENTRATED WET-PROCESS PHOSPHORIC ACID. *W. C. Scott, G. G. Patterson, and A. B. Phillips, Division of Chemical Development, TVA, Wilson Dam, Ala.*

In earlier pilot-plant work, process and equipment were developed for concentrating wet-process phosphoric acid to the 70% P₂O₅ range. However, some of the products contained acid-insoluble tripolyphosphates. Decreasing the retention time overcame this difficulty. The study includes information on storing and handling of the highly concentrated acid, use of the acid in the production of liquid and solid fertilizers, and a detailed investment and production cost estimate for a 100-ton-per-day plant.

EFFECT OF PARTICLE SIZE ON THE GRANULATION OF TRIPLE SUPERPHOSPHATE. *Boyce M. Olive and John O. Hardesty, Agricultural Research Service, USDA, Beltsville, Md.*

Triple superphosphate having physically stable particles was separated by proportionate screening into 12 lots representing four definite particle-size distribution patterns. Performance of each lot in laboratory ammoniation-granulation tests was based on sensitivity to moisture change at or near the moisture level required for agglomeration, the yield of desirable product, and the particle growth during processing.

Performance was best in lots containing a low proportion (5 to 15%) of coarse (6- to 20-mesh), a high proportion (65 to 85%) of intermediate (20- to 65-mesh), and a relatively low proportion (10 to 20%) of fine (-65-mesh) material. A higher proportion of coarse particles was detrimental to particle growth and a higher proportion of fines made the material sensitive to slight variations in moisture content. Particle-size distribution had less effect on the granulation characteristics of a superphosphate having soft, fragile particles than on one having hard, discrete particles. The fragile particles appeared to collapse on being wetted and behaved like fine material. Attention to size and structure of this particle in raw materials entering the granulation process

seems essential to adequate process control.

TVA PROCESS FOR PRODUCTION OF GRANULAR DIAMMONIUM PHOSPHATE. *R. D. Young, G. C. Hicks, and C. H. Davis, Division of Chemical Development, TVA, Wilson Dam, Ala.*

A process was developed on pilot-plant scale for production of granular diammonium phosphate in a continuous ammoniator-granulator from anhydrous ammonia and wet-process or electric-furnace phosphoric acid. The process involves partial ammoniation of the acid in a preneutralizer and completion of the ammoniation in the ammoniator-granulator drum. Granulation

is controlled by recycling product fines to the drum. Excess ammonia used as a driving force in the drum to ammoniate the material to diammonium phosphate is recovered by scrubbing the exhaust gases with the feed acid before it enters the preneutralizer. Material from the ammoniator-granulator is dried and then screened to obtain a closely sized product.

Straight diammonium phosphate of 18-46-0 grade was produced with wet-process acid and 21-53-0 was produced with electric-furnace acid; a recycle ratio of about 2.5 was required. Several N-P-K grades, such as 18-18-18 and 14-35-14, were produced without difficulty by adding other feed materials.

Fertilizer Industry

Round Table Program

Features materials handling and new materials in fertilizer formulation

QUESTIONS, questions, questions—175 of them—will be answered at the Fertilizer Industry Round Table, November 8-10 at the Mayflower Hotel, Washington, D.C.

One of the highlights of the meeting will be a panel discussion on the composition and uses of new materials in fertilizer formulation. This discussion will cover conventional, semi-granular, granular, bulk blending, and the problem of uniformity.

The following program has been planned to answer the questions most troublesome to the fertilizer industry:

WEDNESDAY, NOV. 8—Vince Sauchelli, of National Plant Food Institute, will open the meeting. Materials handling will be the subject of the morning. Special emphasis will be placed on the pneumatic handling of bulk solids and unloading cars.

Arthur Sanders, of Scale Manufacturers' Association, will discuss the important problem of materials handling and weighing. Elmer Perrine, Allied Chemical Co., will lead a panel discussion on the handling of anhydrous ammonia and solutions. Tom Martin, U.S. Industrial Chemical Co., will review handling of phosphoric acid, and Frank Nielsson, International Minerals and Chemical Corp., sulfuric acid. The session will close with a talk on the needed awareness of safety in a

production plant by a member of the National Safety Council.

THURSDAY, NOV. 9—Frank Pocta, of Shipping Bag Association, will lead a panel discussion on bag construction, bag handling, bag closure, and proper stowing of bags in cars and trucks.

Dust collection will be discussed by G. Schneider, of Western Precipitation. He will tell how Western established its dust collecting program and the equipment installed for this purpose. L. A. Eiben, of Buell Engineering Co., Northern Blower Division, will present a complete discussion of Buell's dust collection system.

Time permitting, there will be presentations of a survey of ammoniation practices. A. B. Phillips, of TVA, will lead the discussion.

FRIDAY, NOV. 10—Following the annual business meeting, Travers Hignett, of TVA, will lead the panel discussion on the composition and uses of new materials in fertilizer formulation.

The program will close with a discussion of conditioning agents in mixed fertilizers by John Hardesty, USDA.

The Round Table has sought to include all 175 questions wanted answered by the fertilizer industry. If you have a question, better plan to attend this annual meeting.

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TECHNICAL REVIEW

The American Chemical Society, at its 139th national meeting in Chicago last month, discussed many subjects of interest to farm chemicals manufacturers.

Abstracts of a few of the papers presented appear below.

MICRONUTRIENT USES IN FERTILIZERS. *R. P. Thomas, International Minerals & Chemical Corp., Skokie, Ill.*

With the increase in nutrient concentration of fertilizer materials, the micronutrient content has decreased, until it is now necessary to add definite amounts of micronutrients in order to make a really complete fertilizer for today's needs. The trend in the use of micronutrients is away from separate applications of individual element carriers to the inclusion of many micronutrients in the formulation of premium fertilizers.

There are many ways of adding trace elements to both solid and liquid fertilizers. In solid fertilizers, trace elements are applied in water-soluble form, controlled soluble salts, water-insoluble minerals, fritted materials, and chelated salts. Each form has its advantage and disadvantage in both the fertilizer mixture and their later availability in the soil.

Micronutrients are also being added to many liquid fertilizers as chelates or forms which will not react with fertilizer ingredients in the liquid. Although there is no satisfactory way of establishing the amounts of trace elements used in fertilizers, all available data indicate that their use is increasing rapidly. The addition of minor elements is one of the contributing factors to the formulation of premium grade fertilizers.

PROPERTIES AND USE OF CHELATES IN CROP PRODUCTION. *John C. Brown and Lee O. Tiffin, Soil and Water Conservation Research Division, Agricultural Research Service, Beltsville, Md.*

Four iron chelates were ranked in the order of their stability by measuring their capacity to retain iron against a competing chelating agent, ethylenediamine-di(*o*-hydroxyphenylacetic acid) (EDDHA). The properties of the iron ore in aqueous solution became altered when combined with the chelating agents.

The chelating agents were found to compete with plant roots for iron, and the roots of several plant species differed in their capacity to absorb iron and other elements

from the chelating agents. When the molar concentration of the chelating agent exceeded that of the iron, the amount of iron absorbed by some plants sharply decreased. This occurred in six out of 11 plant species tested. The other plant species absorbed iron at higher chelating agent concentrations. In the latter cases, there was evidence that stability of the metal chelate may have been altered at the root by the reduction of ferric to ferrous iron. Plants differed in their capacity to reduce iron at the root.

METAL AMMONIUM PHOSPHATES AS FERTILIZERS. *G. L. Bridger, M. L. Salutsky, and R. W. Starostka, W. R. Grace & Co., Clarksville, Md.*

A number of bivalent metals including magnesium, iron, zinc, copper, and manganese form ammonium phosphates having the general formula $\text{MeNH}_4\text{PO}_4\text{xH}_2\text{O}$. These compounds are very slightly soluble in water and soil solutions. It has been demonstrated that they are effective sources of nitrogen, phosphorus, and the various metals to plants through both foliar and soil application. When properly granulated they can be applied to the soil at extremely high rates without danger of burning plant roots, and they continue to furnish nutrients over long periods of time. In pulverized form they may be applied to the leaves of plants at high rates without burning.

CHELATION IN PLANT NUTRITION. *Arthur Wallace, Department of Horticulture Science, University of California, Davis.*

The use of synthetic chelating agents to supply micro-nutrients to plants is increasing. Stability against hydrolysis of the metal chelate complex, replacement reactions, and inactivation of the chelating agent in soil influence the usability of these chemicals. The soil inactivation is supposedly chemical rather than biological. Iron chelates sometimes inhibit Mn absorption.

Chelating agents sometimes compete with plant roots and soil for metals. They can be absorbed by plant roots and

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TECHNICAL REVIEW

translocated to foliage and fruits but are poorly re-translocated. The mechanism of absorption by plant roots is unclear and some workers believe that the metal is separated from the chelating agent at the root surface, the metal only entering the root.

Whether or not chelating agents facilitate translocation of metals in plants is also controversial. Some indirect evidence indicates that chelating agents are slowly metabolized in plants and in soil. Although soil application is the most widely used method of supplying metal chelating agents to crops, some new chemicals show promise for foliage application. Synthetic agents have interesting effects on some enzyme systems.

CHELATES AND THE TRACE ELEMENT NUTRITION OF CORN.

Leon Chesnin, Agronomy Department, University of Nebraska, Lincoln.

Many interrelationships of essential trace nutrient elements exist and influence the growth and composition of corn. In order to control the nutrient environment, investigations of the trace element nutrition of corn were carried out under greenhouse conditions. In a sand culture study of the effect of five variables (Zn, Fe, Mn, Cu, and B) each at five levels in a nutrient solution, interaction effects were found of a number of trace element combinations on dry matter production and the composition of corn. A solution culture study indicated that corn could utilize certain chelated forms of iron more effectively than others in its metabolic processes. Results of studies of the effects of soil applications of various chelated and inorganic forms of zinc also indicated differences in the growth response of corn to the form and rate of zinc applied.

SOIL ORGANISMS AND SOIL CHELATION.

A. Schatz, Philadelphia, Pa.

Microbial activity in the soil produces a greater amount and variety of metal-binding substances than occurs anywhere else in nature. These are formed during decomposition of organic matter by extracellular microbial enzymes, as excretory products during the metabolism of the living organisms, and upon death of the microflora and microfauna whose "bodies" are then broken down. Such substances include carbohydrates, lipides, proteins, nucleic acids, and the simpler constituents of these materials; fermentation products, vitamins, pigments, etc. At present, there is little or no detailed knowledge about the relative importance and activity of each of these metal-binders, or groups of metal-binders, with respect to their interaction with individual rocks and minerals under different edaphic conditions that obtain in agriculture and geology.

INTRODUCTION TO MICRONUTRIENT ELEMENTS.

Perry R. Stout, Department of Soils and Plant Nutrition, University of California, Davis.

During the past 20 years micronutrient elements have gained new prominence in assuming indispensable roles as contributors to agricultural productivity. They are now considered as agricultural chemicals of commercial importance. Besides aiding in maintaining productivity of important land already under cultivation, the opening of new tracts has been made possible through the introduction of micronutrient elements as a fertilizer. Zinc, copper, and molybdenum have been responsible for spectacular land developments involving millions of acres. In the semiarid West, zinc has become second only to nitrogen in frequency of use as a fertilizer.

MICRONUTRIENT DEFICIENCIES IN THE UNITED STATES.

Kermit C. Berger, Soils Department, University of Wisconsin, Madison.

A survey of micronutrient deficiencies in plants in the U. S. conducted by Trace Element Committee of Council on Fertilizer Application showed boron deficiency is the most widespread of all deficiencies. The most important crops with the numbers of states reporting boron deficiencies are alfalfa, 37; cruciferae, 23; fruit and nut trees, 18; clovers, 13; beet, 11.

Manganese deficiencies are reported in the following numbers of states by crops: small grains, 10; beans, 12; nut and fruit trees, seven; corn, three. Zinc deficiencies are found most widespread in corn, 17 states; fruit and nut trees, 16; beans, five; potatoes, two. Copper deficiencies are reported in four states for onion; small grain, three; grasses, three; nut and fruit trees three; corn, three. Iron deficiencies are found largely on alkaline soils and are reported in eight states on fruit and nut trees; seven on ornamentals and shrubs; five on soybeans; three on sorghum; and five on grasses. Molybdenum deficiencies on alfalfa are reported in 11 states; on cauliflower in seven; peas, four; soybeans, three; and also on several other crops to a lesser extent.

THE ADVANTAGE TO SOIL AND PLANT CHEMISTRY OF TRACE ELEMENTS DISSOLVED IN AQUEOUS AMMONIA-AMMONIUM SULFATE SOLUTION.

Jackson B. Hester, Sr., Jackson B. Hester Agricultural Research Laboratories, Elkton, Md.

Research has been conducted on dissolving trace element salts (Cu, Mn, Zn, Co, Ni, B, Mo, S, Cl) in 28% ammonium hydroxide in the presence of ammonium sulfate to form a stable complex. A saturated solution of one has little effect on the solubility of another of the salts concerned when properly dissolved in the correct order.

This solution can be sprayed on the foliage, directly applied in the soil, applied in irrigation water, with anhydrous ammonia applications, with soluble fertilizers, and applied to dry fertilizer mixtures with remarkable utilization of these elements by the biological organism concerned. The organic and mineral composition in plants is favorably affected for animal consumption. The solution has remarkable lack of toxicity in over-dosages to plants.

METAL CHELATES IN AGRICULTURE.

E. J. Haertl, Agricultural Chemicals Development, The Dow Chemical Co., Midland, Mich.

The use of chelated iron as a source of iron for iron-deficient or chlorotic plants has become a well established practice. Further interest has developed in the use of synthetic chelating agents for the correction of other metal deficiencies in plants; specifically zinc, manganese, and copper. The synthetic chelates of these metals vary somewhat in structure and performance in the field. Experimental work has been done using the synthetic chelating agents to improve the metal nutrition of plants.

With the recognized increase in so-called minor element deficiencies it is important to arrive at a solution to the problem. There are some conflicting views as to the value of these metal chelates in supplying the metals for plant metabolism. Instances occur where it is difficult to reconcile laboratory or greenhouse performance with that encountered in the field. To arrive at an answer will require a critical evaluation of what experimental work has been done and further well directed research.



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12-12-12 16-8-8 14-0-14 15-10-10 20-10-10 12-12-12 16-8-8 14-0-14 15-10-10 20-10-10 12-12-12

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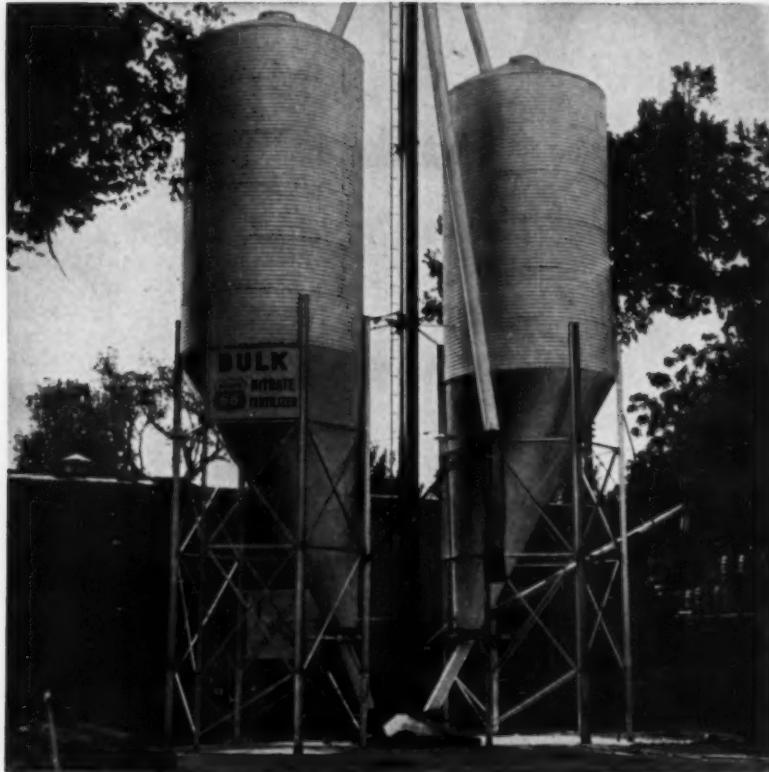
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Sound crazy? Well, it isn't. By the spring of 1963, our space administration people hope to land a spiderlike object called the Surveyor on the moon to test the moon's surface.

A robot drill has been designed by Armour Research Foundation, of Chicago, Ill., just for this project. This drill will bore through the lunar dust and rock and pick up samples for on the spot analysis. The 45-pound drill will bore 6 inches, bring up a sample, and deposit it in one of the pockets of a "Lazy Susan" device. This operation will continue until a depth of 5 feet is reached.

Each sample of the moon soil will then be sandwiched into a plastic slide and observed through a microscope under polarized light to determine its crystalline properties. The pattern will be compared to known earth samples.

Such information as intensity of cosmic radiation, surface hardness and composition, subsurface radioactivity, and earthquake activity on the moon's surface must be obtained before manned landings are possible.

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THE DUST GETS "BIT"

If Allied Chemical Corp. has its way, that old saying made immortal in Class C western movies—"and another one bit the dust"—is going to disappear.

Allied's Solvay Process Division recently produced a film entitled "Dust Costs Money." Theme of the film is the fact that cost of dust-treating roads is expensive. In fact, average cost of gravel replacement on unpaved roads in U. S. is \$200 a mile. This is only a fraction of the amount spent to dust-treat these roads.

In rides the "cavalry" to the rescue. Calcium chloride can cut those dust-treating costs to a fraction. In fact, the film points out, more than 250,000 tons are being used to correct the dust dilemma right now.

Like any weary, dusty traveler, *The Slurry* is happy to have dust controlled. But shed a tear over the passage from the American scene of that classic statement—"and another one bit the dust." No western will ever seem the same again.

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in Corn Nets
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FREE:

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SHOWN above are just a few of the merchandising aids that Shell has prepared to help you sell your brands of aldrin, dieldrin, endrin, Vapona® and Phosdrin® Insecticides and D-D® and Nemagon® Soil Fumigants.

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NEW YORK, N. Y.

HERE'S THE LATEST REPORT ON THE AIRLIFT OF SEVIN TO EGYPT WHICH SAVED THEIR COTTON CROP FROM AN INVASION OF ARMY WORMS. YOU MIGHT WANT TO TELL YOUR READERS THAT THIS AIRLIFT OF SEVIN WAS FROM SUPPLIES ALREADY ASSIGNED TO UNION CARBIDE INTERNATIONAL AND THUS DID NOT INCLUDE SEVIN INSECTICIDE WHICH WAS AVAILABLE FOR DOMESTIC MARKET. UNION CARBIDE HAS BEEN ACTIVE IN DEVELOPING OVERSEAS MARKET FOR THIS SAFE NEW INSECTICIDE EVER SINCE IT WAS INTRODUCED. WE HAVE RECEIVED MANY GOOD COMMENTS ON THIS AIRLIFT IN PUBLICATIONS AROUND THE WORLD, INDICATING THAT THIS EFFORT BY AMERICAN FREE ENTERPRISE IS APPRECIATED BY MANY COUNTRIES AS AN INDICATION OF AMERICA'S DESIRE TO HELP BUILD A STRONGER FREE WORLD.

UNION CARBIDE CHEMICALS COMPANY
DIVISION OF UNION CARBIDE CORPORATION



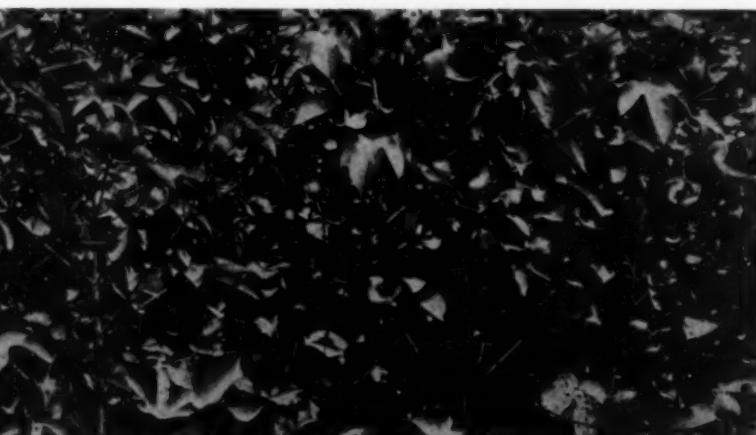
Cotton being sprayed with Sevin by Egyptians, to prevent the army worm from ruining the crop. An estimated 9 million worms per acre were threatening the cotton crop, which is second only to the Suez Canal in Egypt's economy.



Pouring Sevin into ground spray rig. In Egypt, most insecticides are applied by hand with knapsack sprayers. Workers become soaked with the chemical solutions.



Egyptian workers shown mixing the Sevin insecticide with water to make a spray for applying to the cotton crop. This is more effective than hand-picking the insects off, as was done this summer when disaster threatened the crop.

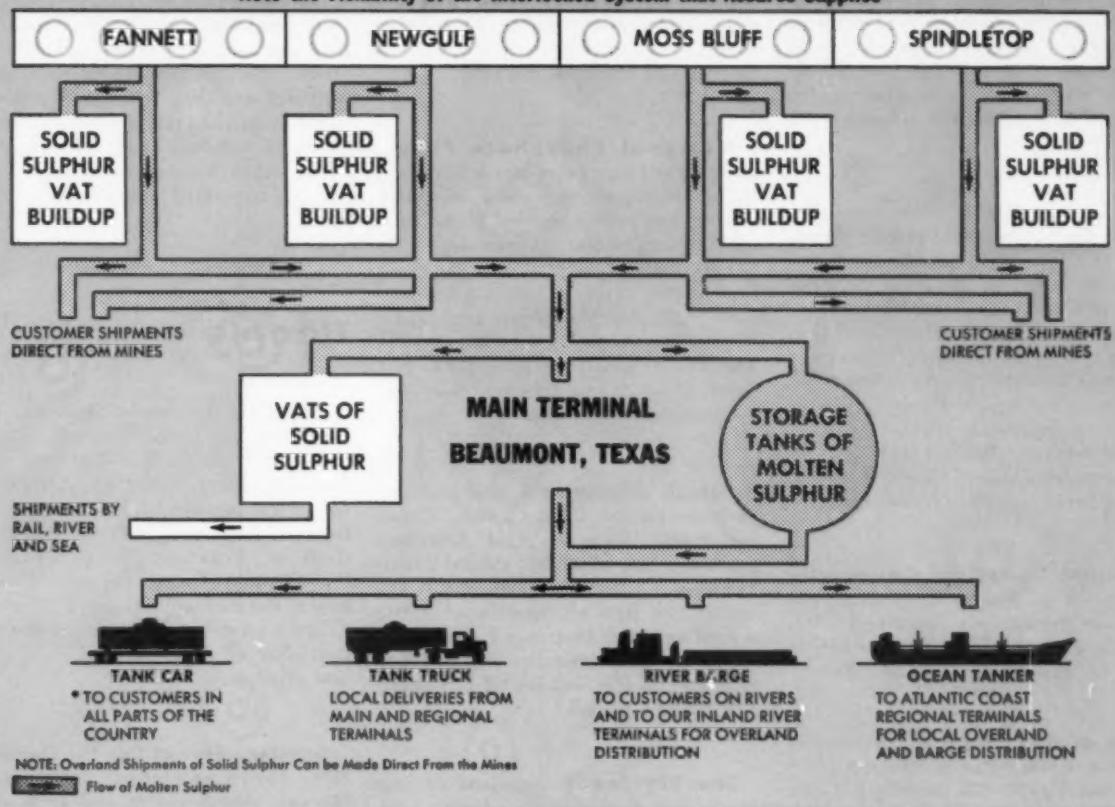


Egyptian field of cotton, showing no damage by the army worm. It was protected by the use of Sevin insecticide. Army worms have built up a resistance to the chlorinated hydrocarbons usually used in Egypt.

molten sulphur

HOW TGS MOLTEN SULPHUR TRAVELS FROM FRASCH MINES TO CUSTOMERS

—Note the Flexibility of the Interlocked System that Assures Supplies—



Flexible Facilities to meet a Growing Demand

The rapidly growing demand for deliveries of sulphur in molten form—and it is coming from all parts of the country—is well-answered by the flexibility of our production, storage and distribution facilities.

Here, graphically, is the way TGS Molten Sulphur moves from the four Frasch Process producing areas in Texas to customers. Unusual flexibility enables us to do several things simultaneously. We can fill orders direct from the mines, build up inventory at our main terminal in Beaumont, Texas, ship to customers from this main terminal

or supply our regional terminals.

We maintain steady production schedules at all properties. With flexible storage, shipping and delivery facilities of not only molten sulphur but solid sulphur, we are in a strong position to serve the sulphur-consuming plants all over the United States and Canada.* Our sulphur recovery plants (from natural gas) in Wyoming and Alberta take care of the demand in northwest United States and Western Canada for both molten and solid sulphur.



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• Okotoks, Alberta, Canada

NEWS OF THE INDUSTRY

Construction of the largest electrolytic caustic-chlorine plant in South America has been announced by **Diamond Alkali International Corp.**, a wholly owned subsidiary of Diamond Alkali Co. The plant, scheduled to go on stream in 1963, will be located in Cubatão, Brazil, and will be known as Carbocloro-Industrias Químicas Ltda. Design capacity is 90 tons of chlorine and 100 tons of caustic soda a day, with provisions to double his production. Future plans call for upgrading the chlorine into additional related products.

A joint study is being made by **Cerro Corp.** and **Bridgeport Brass Co.**, Div. of National Distillers and Chemical Corp., to determine the feasibility of building an aluminum reduction plant at Wauna, Ore. Cerro has already taken an option on a plant site at Wauna, and has signed a 20-year contract with Bonneville Power Administration to supply electric power starting September, 1963. Final decision will be made on completion of the study and on arrangement of financing.

Stepan Chemical Co. reported net income of \$914,460, or \$1.30 per share for the first six months of 1961, compared with \$751,229, or \$1.07 a share for the same period of 1960.

The second stage of production facilities of the nitrogen fertilizer plant at Aswan, Egypt, was recently put into operation, with the final stage scheduled for completion in 1968. Daily production of ammonium nitrate-limestone has now been increased from 1200 to 1600 tons. The plant was built jointly by BASF, CITRA (a subsidiary of the French firm Schneider-Creusot), and Friedrich UHDE GmbH, (a subsidiary of Farbwerke Hoechst AG, Germany), with Uhde as prime contractor. Further expansion in production capacity depends upon availability of power from the Aswan Dam which has been under construction since 1960.

Pittsburgh Coke & Chemical Co.'s sales for the first six months totaled \$22,885,000, with a loss of 68 cents per common share, as compared to sales of \$34,670,000 and earnings of 78 cents per common share in the first six months of the previous year. President Henry L. Hillman indicated that the disappointing sales were due in part to the slow economic recovery of other industries served by the company.

Diamond Alkali Co.'s Belle, W. Va., plant has a new chloremethane unit which employs the most modern scientific techniques, assuring a high degree of automation as well as low manufacturing costs. Loren P. Scoville, general manager of the Chlorinated Products Division, in making the announcement recently, stated that the expansion would mean a dependable supply of chloromethanes and acid to eastern and southern markets.

National Phosphate Corp., founded less than two years ago by Erol Beker, president and chief executive officer, has just completed plans for a multimillion dollar expansion of its facilities at Marseilles, Ill. National Phosphate's plans include an approximate tripling of phosphoric acid capacity, the upgrading of a portion of the acid to diammonium phosphate, and construction of a sulfuric acid plant and a molten sulfur terminal.

Potash deliveries for agricultural purposes in the U.S., Canada, Cuba, and Puerto Rico by eight American producers and importers totaled 2,085,775 tons of salts, (1,211,310 tons K.O) during the first six months of 1961, according to the American Potash Institute. During the second quarter of 1961, deliveries in the continental U.S. were 535,925 tons potash.

The Big Sandy activated carbon plant near Ashland, Ky., began production early this year. The new plant is operated by **Pittsburgh Chemical Co.**, a subsidiary of Pittsburgh Coke & Chemical Co. It occupies a 25-acre site within a 300-acre tract along the Big Sandy River.

Construction has started on a new contact sulfuric acid plant at **Swift & Co.'s** phosphate center at Agricola, Fla. Scheduled for completion in April, 1962, the new unit will supplement two existing acid plants, tripling the present capacity.

International Minerals and Chemicals Corp. plans a \$10 million expansion of its Canadian subsidiary's potash production facilities at Esterhazy, Saskatchewan, Canada. This expansion is expected to be completed by early 1963, and will boost output potential from its present 420,000 tons annually to 1,200,000 tons. The shaft at

Esterhazy will open up what is recognized as the world's largest known deposit of high grade potash ore.

Virginia-Carolina Chemical Corp. realized slightly higher net earnings on lower sales in the fiscal year which ended June 30. Edward B. Adams, vice president for finance, reported that the decline in sales was the net effect of volume losses in the company's fertilizer and bag divisions, partially offset by gains in mining and chemicals. Year-end earnings after taxes, but before special charges, amounted to \$2,525,627 compared with \$2,105,719 last year.

People

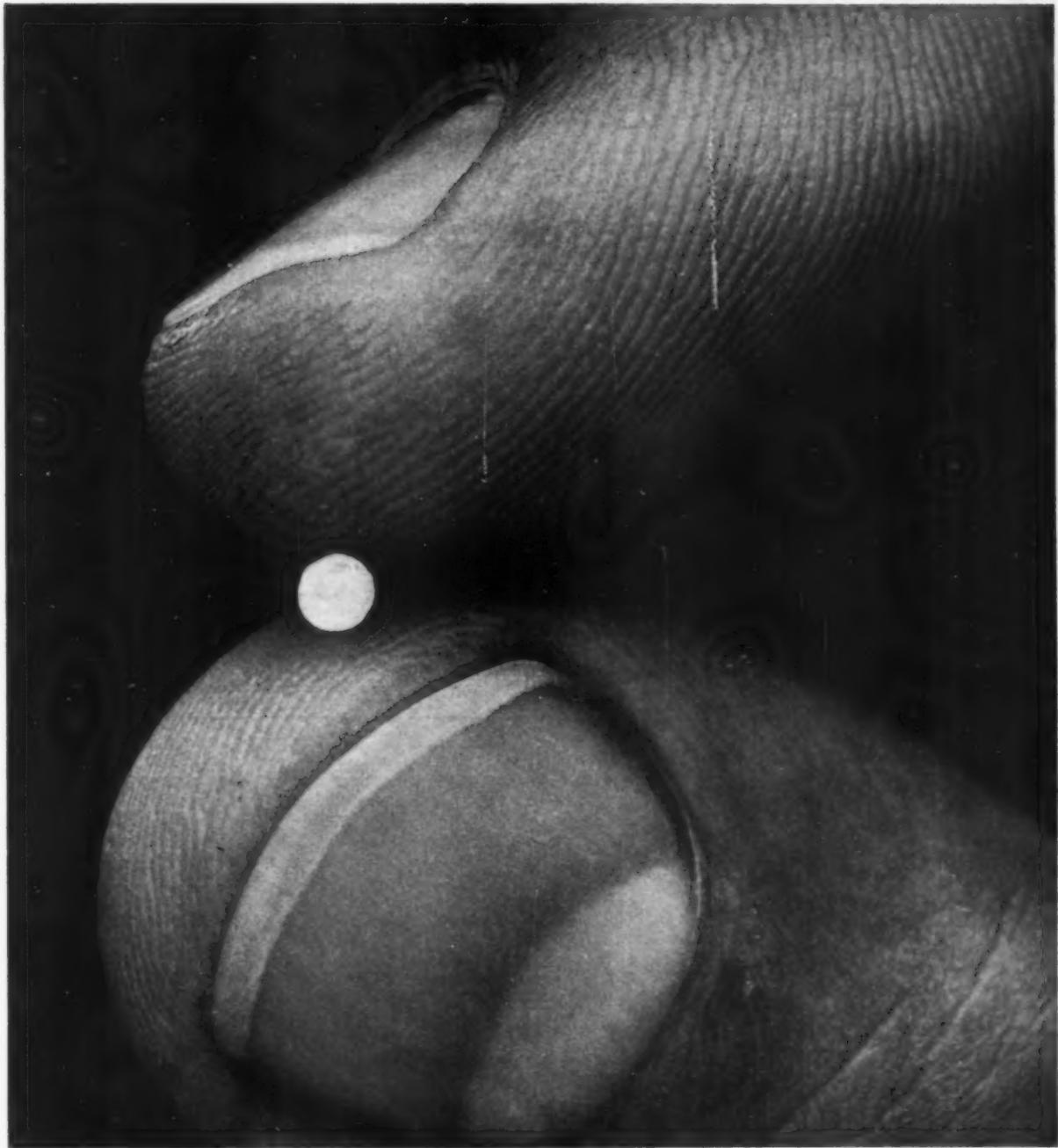
Controllers Institute of America. The 5200 members of the Institute recently elected Adrian H. Van Kampen, controller-chemical industries, Armour & Co., vice president of Chicago Control and Edward R. Adams, vice-president of finance, Virginia-Carolina Chemical Corp., was named treasurer of the Richmond Control. Memphis Control now has Keith B. Anderson, controller of Riverside Oil Mill, as a new director.

Spencer Chemical Co. The Board of Directors has elected Eugene W. Morgan vice-president and treasurer; James A. Borders, secretary; Hubert F. Crawley, controller; Joseph R. Hughes, assistant treasurer; and James G. Dieter, assistant secretary. John P. Miller was named executive vice president in charge of financial affairs.

Allied Chemical Corp. Jack M. Blalock, formerly manager of market surveys, has been promoted to manager of heavy chemical sales for Allied's General Chemical Division. He has been with Allied for 14 years, and formerly served as manager of General Chemical's St. Louis office.



Armour Agricultural Chemical Co. Robert A. Dillard, formerly plant manager at Memphis, Tenn., has been named plant manager in Nashville. He succeeds George C. York, who recently



From little urea prills big fertilizer profits grow

This remarkable urea prill, produced by Cobalez of Belgium, is probably the most economical and efficient source of solid nitrogen material available in the world today.

Belgian urea prills give you a guaranteed 46% nitrogen. The price per unit of nitrogen is comparable with competitive solid materials. What's more, the nitrogen is concentrated in a compact, uniform unit. Result? Excellent distribution. Easier handling. Substantial savings on transportation and storage.

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Is it any wonder H. J. Baker goes 3,000 miles to get them?

You can buy Belgian urea prills in America right now. In quantity. With fast delivery assured. As the first step in seeing how much better they can do

the job for you—and how much bigger they can make your profits grow—send for a free sample and complete information. Simply write to the H. J. Baker office nearest you.

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NEWS OF THE INDUSTRY

retired after 35 years with Armour. Dillard's successor is D. D. Spurlock, who has been assistant plant manager in Memphis. J. P. Henley, a salesman for the company since 1950, has been promoted to credit manager at the company's Albany, Ga., division.



New officers of Mississippi Soil Fertility and Plant Food Council, elected at the Council's recent convention, all reside in Jackson, Miss. They are (left to right) W. F. Harris, president; W. L. Ashley, vice-president; and Gene A. Triggs, secretary-treasurer.

Enrico Pelitti has been appointed manager of Chemical and Industrial Corp's Phosphate Division and its subsidiary, Girdler Corp., of Louisville,

Calendar

October 4-6. Southeastern Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

October 9-10. Agricultural Chemical Applicator's Conference, third annual meeting, The Chinook Hotel, Yakima, Wash.

October 9-11. Western Agricultural Chemicals Association, annual meeting, Hotel Claremont, Berkeley, Calif.

October 12-13. Northeastern Fertilizer Conference, Schine Inn, Chicopee, Mass.

October 29-November 1. National Agricultural Chemicals Association, 28th annual meeting, The Homestead, Hot Springs, Virginia.

October 30-November 1. National Fertilizer Solutions Association convention, Edgewater Beach Hotel, Chicago.

November 2-3. Pacific Northwest Plant Food Association, annual convention, Hotel Gearhart, Gearhart, Ore.

November 6. South Carolina Plant Food Educational Society, annual meeting, The Clemson House, Clemson Agricultural College, Clemson, S. C.

November 6-7. Washington State Weed Association, annual weed conference, Chinook Motel & Tower, Yakima, Wash.

November 8-10. Fertilizer Industry Round Table, Mayflower Hotel, Washington, D. C.

November 12-14. California Fertilizer Association, 38th annual convention, the Jack Tar Hotel, San Francisco, Calif.

November 14-15. Farm Chemicals Marketing Seminar, Yale Club, New York City. Sponsored by FARM CHEMICALS.

November 21. Manufacturing Chemists' Association 11th semi-annual meeting, Commodore Hotel, New York City.

November 27. Council on Fertilizer Application, and Divisions IV (Soil Fertility) and IV-B (Plant Nutrients) of SSSA, joint meeting, Sheraton-Jefferson Hotel, St. Louis, Mo.

November 27-December 1. Entomological Society of America, McAllister and Columbus Hotels, Miami, Fla.

November 27-December 1. 28th Exposition of Chemical Industries, New York Coliseum, New York City.

December 6-7. Alabama Soil Fertility Society annual meeting, Whitley Hotel, Montgomery, Ala.

December 7-8. Michigan Fertilizer and Lime Conference, Kellogg Center, Michigan State University, East Lansing.

December 11-14. North Central Weed Control Conference, Weed Society of America, St. Louis, Mo.

December 13-15. American Society of Agricultural Engineers, winter meeting, The Palmer House, Chicago, Ill.



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Expanda-Kraft offers "strongest, toughest shipping protection" says Owens-Illinois Executive

"We can recommend Expanda-Kraft unhesitatingly whenever a customer asks for strong, tough, maximum shipping protection that can be provided for his product—no matter whether it be alfalfa or yeast, asphalt or zinc sulphate, or anything in between," says P. L. Chism, Plant Manager, Owens-Illinois' Multiwall Bag Division, Valdosta, Ga.

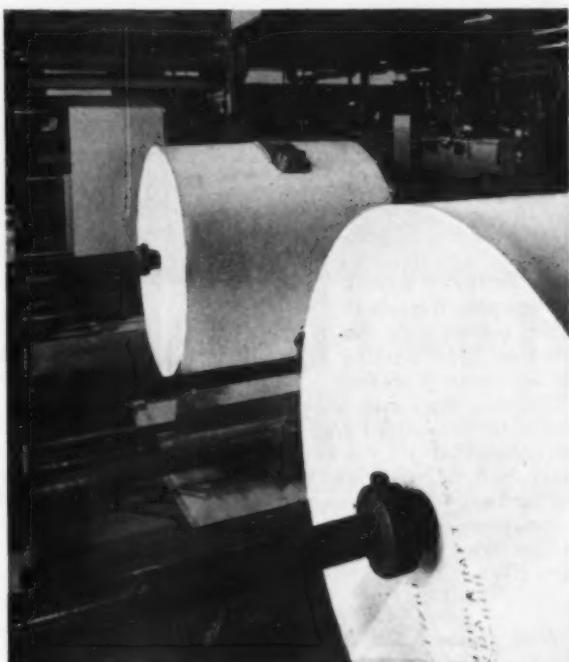
"In heavier bag weights, the Expanda-Kraft paper actually saves the customer money by reducing the total basis weight required, while furnishing more strength than can be available with comparable weights of standard flat kraft.

"Expanda-Kraft produces a sharp and clear printed image because of its low absorbency. Not only do we score an impressive bonus in appearance, thanks to Expanda-Kraft, but it also helps us cut down on ink and glue costs because of this lower absorbency," Mr. Chism reports.

"Our customers particularly appreciate the porosity of Expanda-Kraft paper, for it facilitates the escape of air during filling, a vital factor in maintaining efficient filling rates with valve-type bags. Ordinarily, this kind of porosity might connote high absorbency, but such is not the case with Expanda-Kraft."

Find out what Expanda-Kraft® can do to improve your package. *The H&W Division of Scott does not make bags. But we do make*

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NEWS OF THE INDUSTRY

Ky. A professional engineer Pelitti is well known in the fertilizer industry as a designer of phosphate plants.



Texas Future Farmers of America recently conferred their highest honor on M. S. Wright, Sr. (left), founder and chairman of board of Texas Farm Products Co., Nacogdoches. Wright, a long-time friend of FFA, has been very active in promoting FFA program in east Texas and western Louisiana. Congratulating him on becoming an honorary Lone Star Farmer is one of 3500 FFA members who attended the 33rd state convention.

Leonard Construction Co. has added a new member to its engineering staff. He is Ralph E. Meints, formerly a partner in the Chicago engineering firm of Vern E. Alden Co. Meints will work on special engineering and development assignments for Leonard.

Geigy Chemical Corp. Charles A. Suter has been elected president. He succeeds William F. Zipse, president of the firm since 1943. Marking his 58th year of service with Geigy, Zipse now becomes Chairman of the Executive Committee. Suter had completed 10 years with J. R. Geigy, S. A. in Switzerland before joining the United States company. Rising to vice-president and director in 1943, he has been executive vice-president since 1950.



Suter

W. R. Grace & Co., Davison Chemical Div. The new sales manager for fertilizer materials, mixed fertilizer division, is Lawrence W. Galloway. Before joining Davison, Galloway held positions with Baugh Chemical Co., and National Dairies Co. of Baltimore.

Virginia - Carolina Chemical Corp. New Chairman of the Board is David K. Wilson, who has served as director since 1958. He succeeds Justin Potter, who will continue as president and chief executive officer of the 65-year-old firm.

Geigy Chemical Corp. New resident representative of Geigy Agricultural Chemicals Division in Hawaii is V. W. Olney. His headquarters will be at Kailua, Oahu, where he will have charge of research and product development of agricultural chemicals.



Olney

Raymond Bag Co. has assigned the territory of Michigan, northern Indiana, and Ohio to E. E. Heydt. He was previously connected with Raymond's Chicago, Ill., office.

Associations Meetings

New rating cards will be issued to any person known by an NATA applicator to be a qualified and responsible agricultural pilot, according to John F. Neace, vice president—application—of the **National Aviation Trades Association**. The rating shows the kind of aircraft the pilot is competent of flying in aerial application operations, how many years experience he has had, and what states he has worked in. NATA's new rating will also show what dates during the year a pilot may be available for employment.

The long-awaited day is here. The **Western Fertilizer Handbook** is now being distributed by its publishers, the Soil Improvement Committee of California Fertilizer Association. The Handbook is an authoritative work on fertilizers, their proper use, and other crop cultural practices.

Upcoming developments in all forms of materials, machinery and products associated with the chemical processing industries will be revealed at the 23th **Exposition of Chemical Industries** at the New York City Coliseum, November 27-December 1.

The **North Central Weed Control Conference** will act as hosts when the **Weed Society of America** meets at the Jefferson Hotel in Memphis, Tenn., December 11-14. Local arrangements for the meeting are being handled by Drs. D. D. Hemphill and O. H. Flettall, of University of Missouri, Columbia.

"**Total Service Selling**" is the title given to the series of cross-country training clinics sponsored by **International Minerals & Chemical Corp.** This is the fourth year for the program, which starts October 4 in New York City, and closes November 16 in New Orleans with 10 meetings in as many cities. William W. Chadwick, manager of merchandising, will direct and preside at each clinic.

The National Plant Food Institute and the fertilizer section of the **National Safety Council** were joint sponsors of the Southeastern Regional School on Accident Prevention in Fertilizer Plants. The training course was held recently at Wilmington, N.C. W.C. "Billy" Creel, North Carolina's safety director, was chairman. One of the top subjects discussed was fire fighting and extinguishers.

The joint program of the **Council on Fertilizer Application** and **SSSA's Soil Fertility and Plant Nutrients Divisions** will be held in St. Louis, Mo., on November 27. A. J. Ohlrogge, Purdue University, will preside. The theme for the day will be "The Challenge of the Sixties."

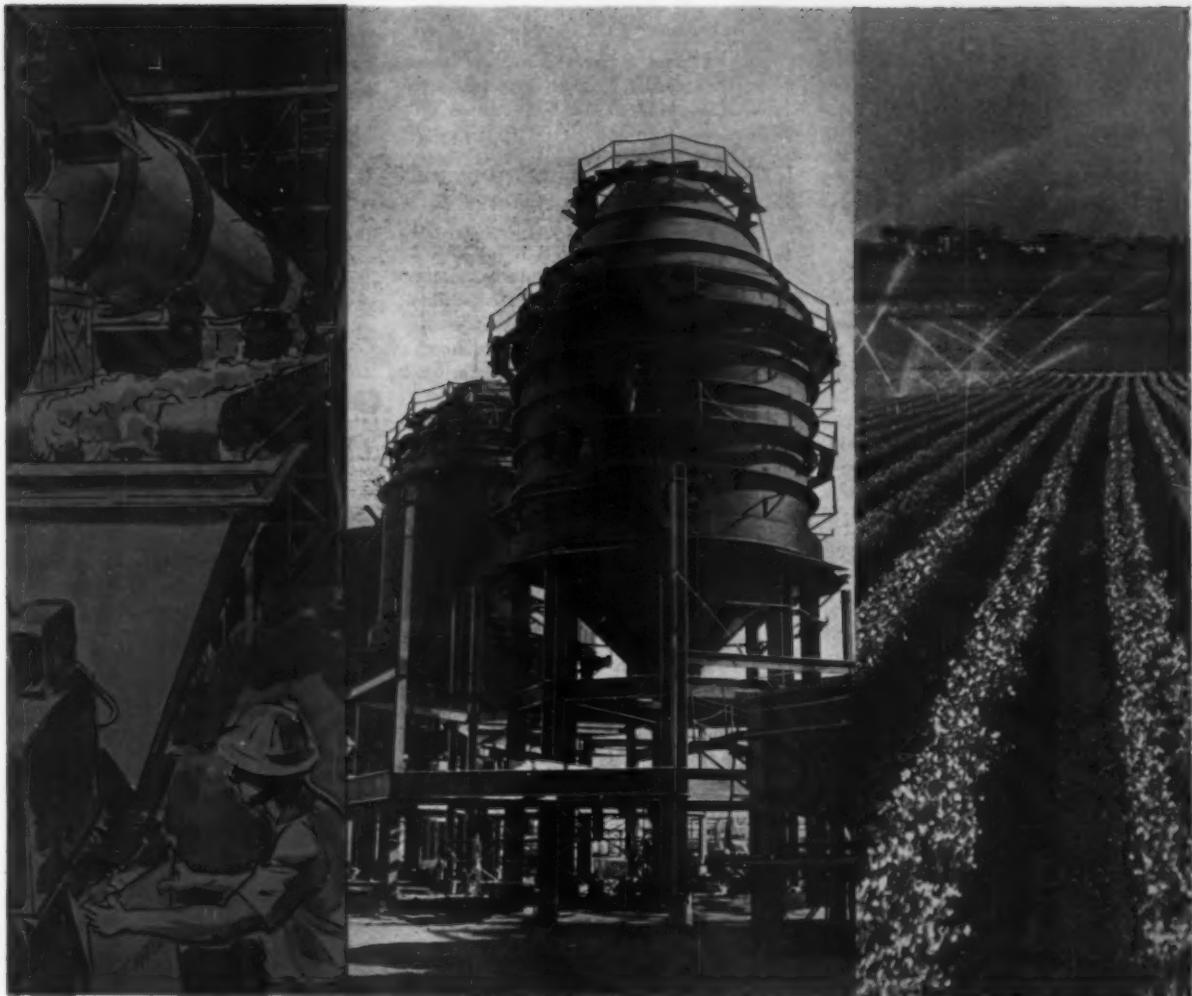
Suppliers Briefs



Brown

Dorr-Oliver Inc. Rowland C. W. Brown has been named general counsel. In his new position, he will direct the legal and patent work for all of the company's divisions and subsidiaries in the United States and abroad. He will retain his present duties as secretary-treasurer. Harold A. Monsor, formerly production manager at the Hazleton, Pa., plant, is the new director of production at Dorr-Oliver's Stamford, Conn., headquarters. In addition to his administrative responsibilities for production there, Monsor will also be in charge of the company's manufacturing operations at Englewood, Colo.

Chase Bag Co. has introduced a polyethylene insert sleeve available in both sewn and pasted and multiwall shipping sacks. The "Chase Poly Insert Sleeve" permits tighter, self-sealing



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NEWS OF THE INDUSTRY

closure and reduces product waste during automatic filling operations, sifting of fine materials and contamination from outside. Performance extras include easy placement of bag on the filling tube; elimination of need for a tuck-in sleeve; and full moisture protection in the sleeve area.



Bemis

Bemis Bro. Bag Co. F. G. Bemis, Jr., was recently elected a vice president. He will continue as director of allied operations, with headquarters in Boston. He is responsible for operation of the company's Visinet mill, paper specialty and plastic packaging plants. He is also a member of the company's Board of Directors.

Owens-Illinois. Frank M. Cannon has been named assistant eastern regional sales manager of the Paper Products Division. He was formerly eastern regional sales manager of the Multiwall Bag Division. He will continue to make his headquarters in New York City. Cannon's successor is B. J. Ainsworth, sales representative in the company's Multiwall Bag Division.

International Paper Co. Two men from the Southern Kraft Division are moving to New York City. John W. Gilbert, Jr., who has been with the company since 1936, is now assistant direc-

MEHRING NAMED CONSULTANT

Arnon L. Mehring has been appointed fertilizer technical consultant for FARM CHEMICALS. He was formerly senior chemist and later fertilizer staff specialist with the U.S. Department of Agriculture. Recently, he has gained prominence for his nationwide survey of fertilizer use by non-farm consumers.

tor of research. John A. Lyden has been named assistant to the vice president in charge of manufacturing. Lyden, who has been in the paper industry more than 33 years, has served as mill manager at three of the company's southern plants.

Chemicals

Kepone, a new insecticide for control of ants and roaches, has been registered exclusively for pest-control operator use by USDA. General Chemicals Division of Allied Chemical Co. reports that Kepone is designed as a long-term

treatment to be used along with recommended sprays and good sanitation practices.

Pseudocumene, previously available as a market development chemical, is now available in commercial bulk quantities from **Enjay Chemical Co.**, a division of Humble Oil & Refining Co. Enjay reports pseudocumene (1, 2, 4-trimethylbenzene) is the first of several higher polymethylbenzenes to reach the commercial stage. End use applications include conversion of pseudocumene to intermediates, suitable for insecticides and pesticides.

Government

The bulletin "Insects and Diseases of Vegetables in the Home Garden," has been revised to include new pest-control ideas. More important, it brings all recommendations on the use of insecticides and fungicides into conformity with the Pesticide Amendment to the Federal Food, Drug, and Cosmetic Act.

Covering 27 kinds of garden crops, the bulletin gives hints on recognizing 180 common insects and diseases, with information on preventing damage from these pests. Copies of this bulletin (HG 46) are free from Office of Information, USDA, Washington 25, D. C.

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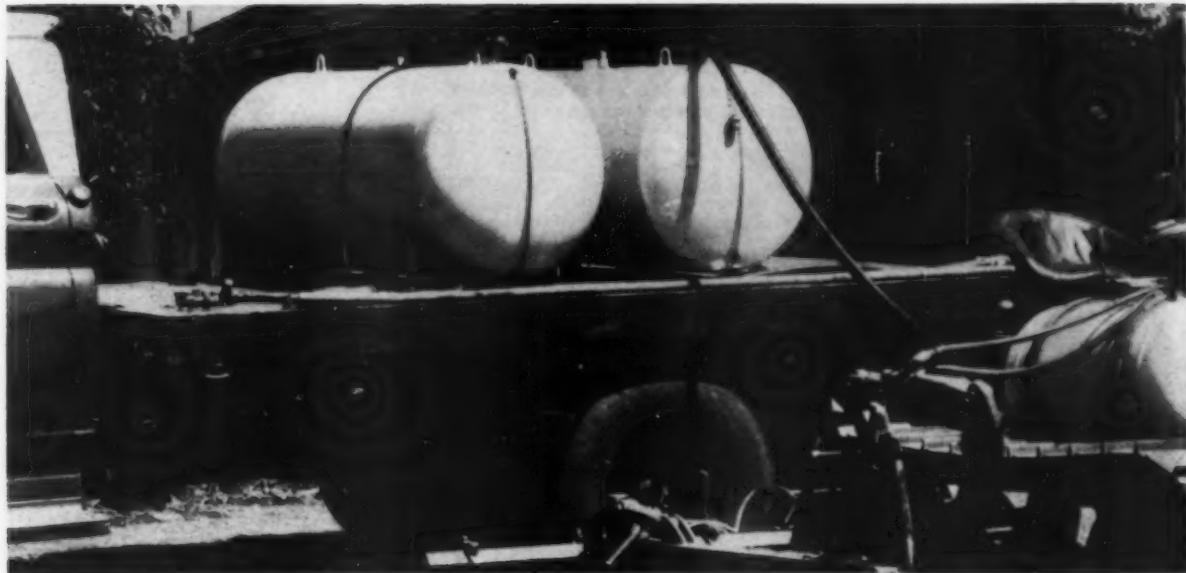
Iron, Zinc and Manganese Compounds—Nu-Iron, Nu-Z, Nu-Manganese and Es-Min-EI (a foliar applied mineral mixture).



This mark tells you a product
is made of modern, dependable Steel.



These Stainless Steel tanks have worked a 60-hour week for seven years—



yet they're like new

The NH₃ Service Company of Salinas, California, uses six 250-gallon Stainless Steel "nurse" tanks and 18 Stainless Steel applicator tanks attached to tractors to apply liquid mixed fertilizer and phosphoric acid* solutions on vegetables and orchards. NH₃ Service Company prefers Stainless Steel tanks because they're strong, need hardly any maintenance. And they *really* last—the tanks are seven years old, yet they're like new.

With Stainless Steel tanks, there's no corrosion problem. There's no scale or bits of metal to clog up tank fixtures and to pollute solutions. And Stainless tanks don't require scrubbing or scouring—they clean easily

* AISI Type 316 Stainless Steel recommended for handling phosphoric acid.

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Chemicals

NEW CATALOGUE

A new catalog of aliphatic organic chemicals produced by Armour Industrial Chemical Company has just been released. It lists some 150 different products along with specifications and typical applications. The booklet also lists Armour sales offices in the U. S., Canada, and Mexico. To obtain your copy, just

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For agricultural pesticide applications, three effective pesticide solvents are Panasol RX-4, which features a high K-B value—93; Panasol AN-2K, featuring high solvency at low cost, and Panasol AN-2, which has excellent low temperature stability. Get the bulletin issued by Amoco Chemicals Corporation telling about these solvents by

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CUSTOM FORMULATING

You specify what combination of copper sulfate, iron sulfate, zinc sulfate, manganese sulfate, or manganese oxide you want—Tennessee Corporation will mix it for you, saving you time, plant space, and labor. For further information on this service, just

CIRCLE 194 ON SERVICE CARD

INSECT CONTROL GUIDE

An excellent reference guide on insect control has been published by Velsicol Chemical Corporation. Its 55 pages, with illustrations, covers classes of insecticides and their uses; application; insect damage and identification; and safety procedures. To get your copy of this manual, just

CIRCLE 195 ON SERVICE CARD

Process Equipment

THICKENERS

A new 24-page booklet issued by Dorr-Oliver, Inc., describes its complete line of thickeners for chemical processing. Single and multiple compartment thickeners having both center-drive and perimeter, are included in the booklet along with descriptions, standard sizes, and specifications for modern thickener designs. For more information, just

CIRCLE 196 ON SERVICE CARD

JET COMPRESSORS

Schutte and Koerting Company has a new bulletin on their line of jet compressors, including fixed-nozzle, manually controlled spindle, and automatically controlled spindle types. It gives details on construction, operation, and application. There is a nomograph

to determine the possible weight ratio of secondary gas to primary gas, and another to determine the compressor size. For your copy, just

CIRCLE 197 ON SERVICE CARD

AIR SEPARATORS

A bulletin describing features of single and double mechanical air separators with detailed diagrams of the equipment available has been published by Raymond Division of Combustion Engineering, Inc. It also covers the various types of materials to be processed, and lists tables of sizes and specifications. To get your copy, just

CIRCLE 198 ON SERVICE CARD

Materials Handling

BIN-FEEDER SPEEDER

Gerotor May Corporation manufactures PneuBin—the only bin-feeding device of its kind. The unit consists of steel-backed, neoprene, pulsating panels mounted on the inside wall of your present bins, and air controls to regulate the panels' action. By the pneumatic inflation and deflation of the panels, the bin contents are positively displaced to insure free flow. For more information just

CIRCLE 199 ON SERVICE CARD

AISLE TRUCKS' NEW LOOK

More than 30 engineering changes have been made in the Raymond Corporation's current line of 2000- and 3000-pound capacity electric straddle trucks. The dead load weight has been reduced; a new high pressure hydraulic system allows use of smaller diameter rams; and the control and steering handles have been redesigned for safety and ease of operation. To find out more about these trucks, just

CIRCLE 200 ON SERVICE CARD

MONARCH SPRAYS

Monarch Mfg. Works, Inc., in their catalog covering Monarch stoneware chamber sprays, also list their non-clog nozzles in brass and steel. Fig. 645 Nozzle is used for scrubbing acid phosphate gases. It's made for full or hollow cone in brass and "Everdur." For your catalog, just

CIRCLE 201 ON SERVICE CARD

Packaging

CONTAINER LOCATER

Vulcan-Associated Container Companies, Inc., is introducing a handy locator for users of metal containers. The first of its kind, it readily shows technical data on sizes, styles and types of steel pails and drums; gallon capacities for each diameter container—plus standard and non-standard diameters. It also shows the closest manufacturing plant and just about everything you need to know to determine your requirements. Be one of the first to use this clever guide, by

CIRCLING 202 ON SERVICE CARD

POLYETHYLENE PAIR

Allied Chemical's General Chemical Division is using polyethylene bottles to hold Plyac, liquid polyethylene spreader-sticker for use with pesticide sprays. Only 2 to 4 ounces of Plyac required to treat 100 gallons of spray. It is packaged in 8-ounce, 1-pint, 1-quart, and 1-gallon bottles. To find out more about this product, just

CIRCLE 203 ON SERVICE CARD

PACKAGING KNOW-HOW

How to Merchandise with Corrugated Boxes is the title of a 24-page booklet from the Hinde & Dauch Division, West Virginia Pulp and Paper Company. It covers packaging information based on sound sales psychology. Included in the booklet are the five points to consider in planning a merchandising package; scientific color selection, and special promotions. To get your copy,

CIRCLE 204 ON SERVICE CARD

Application Equipment

STAINLESS STEEL TANKS

Even highly corrosive materials are easily handled in stainless steel tanks. Foreign particles can't cling to its smooth surface. Booms and nozzles remain open to handle such solutions as liquid fertilizers or other chemical compounds. United States Steel Corporation's booklet, *Stainless Steel Tanks for All Farm Chemicals* may be obtained if you will

CIRCLE 205 ON SERVICE CARD

Miscellaneous

LOW-COST OVEN

A new low-cost, compact drying oven has been designed by Central Scientific Co., a division of Cenco Instruments Corporation. It can be used in a variety of curing and testing operations. It is compact, fully insulated, and controlled by a thermostat. A thermometer, calibrated from -10° to 200°C is included with each oven. To learn more about this oven, simply

CIRCLE 206 ON SERVICE CARD

See page 64 for information on
these Reader Service Numbers:

207—Easy To Open

208—Protect Profits

209—Make It Easy

210—International Reference

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18—Pfaudler 1250 gal. glass-lined reactors.
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NEW & NOTEWORTHY

EASY TO OPEN

Anybody who has used fertilizers or pesticides, which I have done, knows how difficult it is to open multiwall bags.

I saw a bag being used by a commercial fruit grower which seems to



answer the problem. A tab 3 inches in length and 3/8 inch in width is affixed to the closed end of the bag at the top. You just pull the tab and the bag opens easily and quickly.

It might be wise for fertilizer and pesticide manufacturers to look into this tab idea which makes using their products a lot simpler. For more information why not write Bill Siems, Bemis Bros. Bag Company, 408 Pine St., St. Louis 2, Mo., or

CIRCLE 207 ON SERVICE CARD

PROTECT PROFITS

Fertilizer manufacturers have been plagued with the problem of shipping damage to multiwall bags in transit. The American Agricultural Chemical Company, through the use of Pillo Pak, a rigid carliner, has been able to prove conclusively that damage in shipments can be held to an absolute minimum.



Pillo Pak is unique because it is a solid molded corrugated carliner. In addition to holding the bags in place, the new product protects them from nail heads, splinters, and staples on floors and walls.

Like American Agricultural Chemical Company, it might pay you to learn more about Pillo Pak. Contact Jim Barrett, Packaging Materials Corporation,

104 East 40th St., Dept. FC, New York
16, N.Y., or

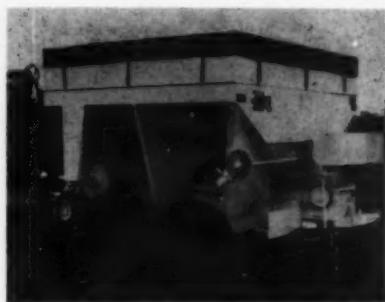
CIRCLE 208 ON SERVICE CARD

MAKE IT EASY

I saw a new fertilizer spreader in operation which incorporates some ideas which you will find useful.

The new machine is tractor-drawn and has a high load capacity. One of the outstanding features is the Dial-A-Matic metering system which is so simple a child could set the rate of application.

Other features which impressed me were the 10-inch heavy duty stainless



steel conveyor, a wide body for greater capacity, improved gusseting, and the tubular frame for greater strength.

Here's a machine worth knowing about and I suggest you write T. Olson, Tyler Manufacturing Company, East Highway 12, Benson, Minn., or

CIRCLE 209 ON SERVICE CARD

INTERNATIONAL REFERENCE

Our editors are busy compiling the 1961-62 FARM CHEMICALS HANDBOOK. This book, for over 47 years, has been the bible of your industry and includes the most worthwhile information on fertilizers and pesticides in the world.

The 1961-62 edition has been completely revised and enlarged to make it even more valuable than ever before. For example, the American Fruit Grower Compatibility Chart and Spray Safety Chart are bound into the edition.

More inclusive statistics on fertilizer outlook and production will be found in the book. Listings of manufacturers, plants, and personnel have been enlarged to make the book more useful.

For readers of FARM CHEMICALS, it can be bought at a prepublication price of \$5. After it has been published, we will have to charge \$7.50 per copy. Order yours now from FARM CHEMICALS, Willoughby, Ohio, or

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Are We Doing Enough?

The farm chemicals industry, smarting from another vicious attack in a national magazine, has every reason to be concerned about poisonous pens. *The Saturday Evening Post*, for instance, is supposed to be a respected magazine "known for its careful checking of facts, etc."

Instead, what readers of that magazine received was an editorial based on *inconclusive results!* The writer sort of reminded us of the type of fellow whom Dr. Robert H. White-Stevens, assistant director of research, Agricultural Division, American Cyanamid Company, must have had in mind when he defined a *crackpot* recently.

He said that he "merely flits from one idea to the next without ever really testing his hypothesis . . . relying solely on his own omniscience and resenting furiously objective inquiry from any other quarter."

In spite of this editorial and other articles which have been published elsewhere just like it, FARM CHEMICALS raises these questions:

Are people really vitally interested in reading about pesticides as such?

Is the farm chemicals industry so preoccupied with defending itself from the attacks of crackpots that it overlooks more *basic* problems?

Is it in the *best interests* of the industry to keep "playing the same old record over and over again?"

These provocative questions linger on with FARM CHEMICALS following a visit with a farm writer for the *Cleveland Plain Dealer*.

Here's a writer who's well versed in farm chemicals, soils, greenhouse and nursery problems, etc. He's not the kind of guy who would write a ridiculous editorial like the one which appeared in the *Post*—or the one in *Newsweek*, entitled "Insect's Revenge." This article attributed "psychiatric disorders" (including schizophrenic reactions) to insecticides!

"People aren't interested in chemicals. They're interested in hunting and fishing," the farm writer reminded us.

This leads us to his recent series of articles, "Our Insulted Waters."

Perhaps the most informative article—and the one enjoying the highest possible readership—was the farm writer's article entitled, "Pest Sprays Are Killing Fish and Wildlife."

Whether you like the article title or not, if you read it you probably would concur that it gives the farm chemicals industry a pretty "fair shake."

You'll shudder with us when you read the lead, though:

"Every normal American has become a walking bug bomb."

If we haven't lost you by now, let's see what makes a newspaper writer "click"—how he selects his material and *why he writes it the way he does*.

In the first place, the writer told us that people would not be interested in reading an article about the *benefits* of farm chemicals. What's more, he said he would be performing a disservice to the industry in writing such a story!

"Dwelling on farm chemicals in newspaper articles will appeal only to food faddists, organic gardeners, and pseudo-medical quacks" the writer points out in an "interview" article appearing on page 26 of this issue. They'll use the information *against* the industry by promptly quoting some of the research findings, etc., *out of context!* (Some of the best articles in FARM CHEMICALS have been misused this way).

He also warned that criticizing the Miller Amendment in even the *slightest* manner is akin to being against soil conservation or the 4-H!

It wasn't long before we gained the impression that the writer was trying to tell us something more *significant* than why he didn't write "stogic" stories about American abundance, the contribution of farm chemicals, and so on.

The message he was trying to get across to FARM CHEMICALS was simply this:

"It's not so important what the farm chemicals industry is doing, but rather what it is *not* doing."

Here's what he feels the industry *should* be doing:

1) Quit worrying about its "poor press" and start recognizing that more *basic* issues—such as water pollution—are the *real* problems.

2) Work more closely with the extension service and experiment stations than ever before to help the *big users* of chemicals do a better, more efficient job.

We think these ideas need exploring. This may not seem to be a plan of attack, as such. But we think the industry's methods should be challenged now and then.

Can we get on the offensive? Be sure to read both the Bob Drake interview, page 26, and the Dr. George R. Ferguson interview on page 13 this issue.



EDITOR

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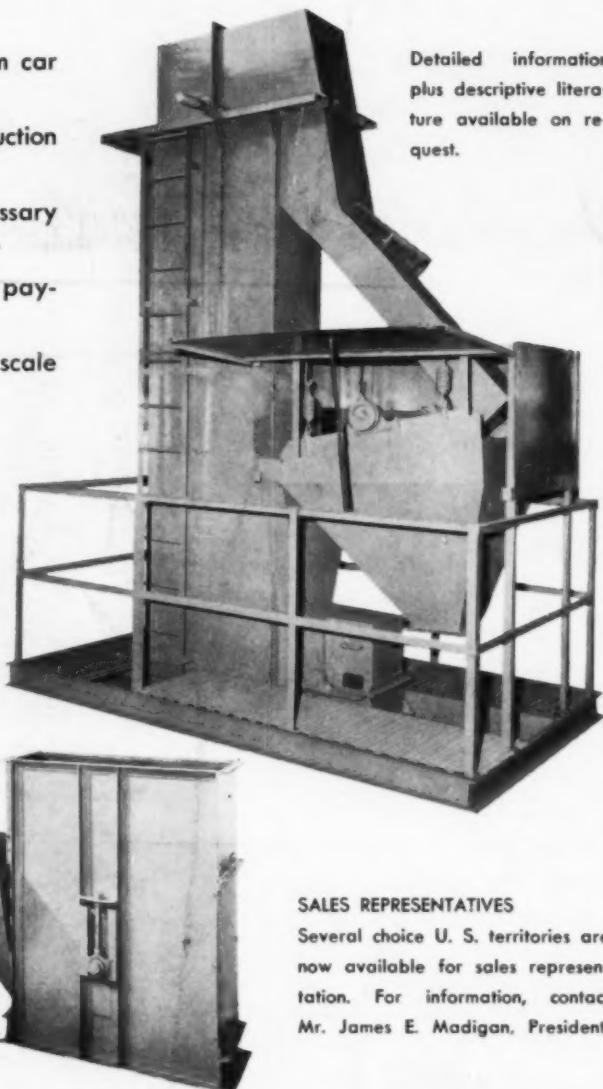


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